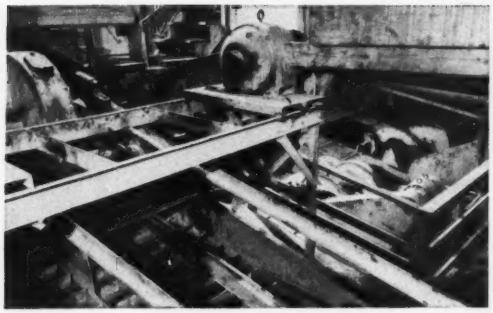
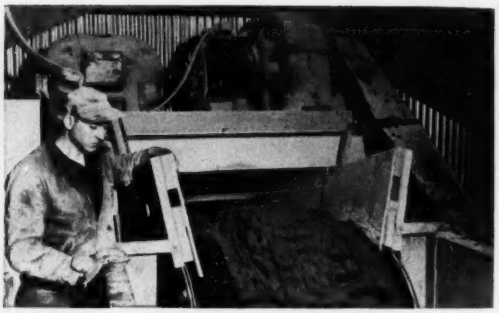
CONSTRUCTION
METHODS AND EQUIPMENT

March 1951

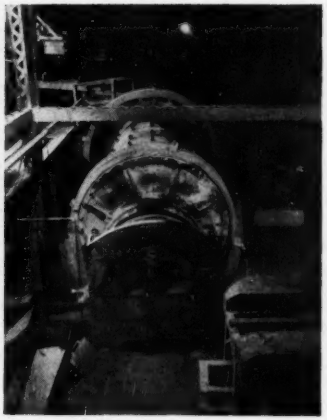


Aggregate under 6 inches is separated in shakers at screening plant. A G-E 5-hp motor drives shakers. Plant is completely automatic.



Carrying cement mix along this indoor conveyor system is a crucial step in construction of the dam. Sturdy G-E 100-hp motor drives the belt.

Aggregate for batching plant at Hungry Horse Dam is carried 1600 feet up the canyon wall by conveyor, driven by reliable G-E 100-hp motors in wooden sheds at intervals of 250 to 300 feet.



This Marcy rod mill, used in the gravel-crushing operation at the screening plant, is driven by a G-E 200-hp motor (right center). The motor is protected against heavy dust.

push-button aggregate processing at 700 tons/hr.

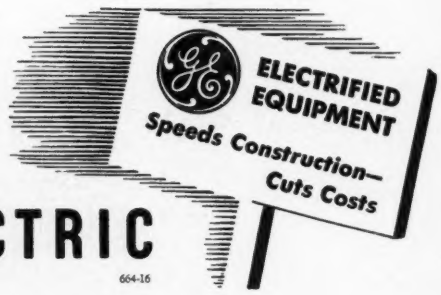
... Electrically

General-Shea-Morrison, contractors for the Bureau of Reclamation's Hungry Horse Dam, are going all-out with electric equipment. Best example is their aggregate plant with its network of interconnecting conveyors geared to process 700 tons of raw aggregate every hour. It's one of the most modern installations of its kind in the country—strictly a push-button operation from raw aggregate handling to mixing. Only with modern electric drives can this world's fourth largest dam be completed on schedule in 1952.

As time goes on, contractors are discovering more and more that it pays to electrify. With co-ordinated use of G-E motors and control and G-E power-distribution systems, they're getting safer, more flexible, and more efficient operation. *Apparatus Department, General Electric Company, Schenectady 5, N.Y.*

Ask him Today!

Whether you buy or build construction equipment, your G-E representative can show you how to do a better job —at lower cost—by complete electrification. Write him now, and he'll call on you at your convenience.



GENERAL ELECTRIC

664-16

RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER

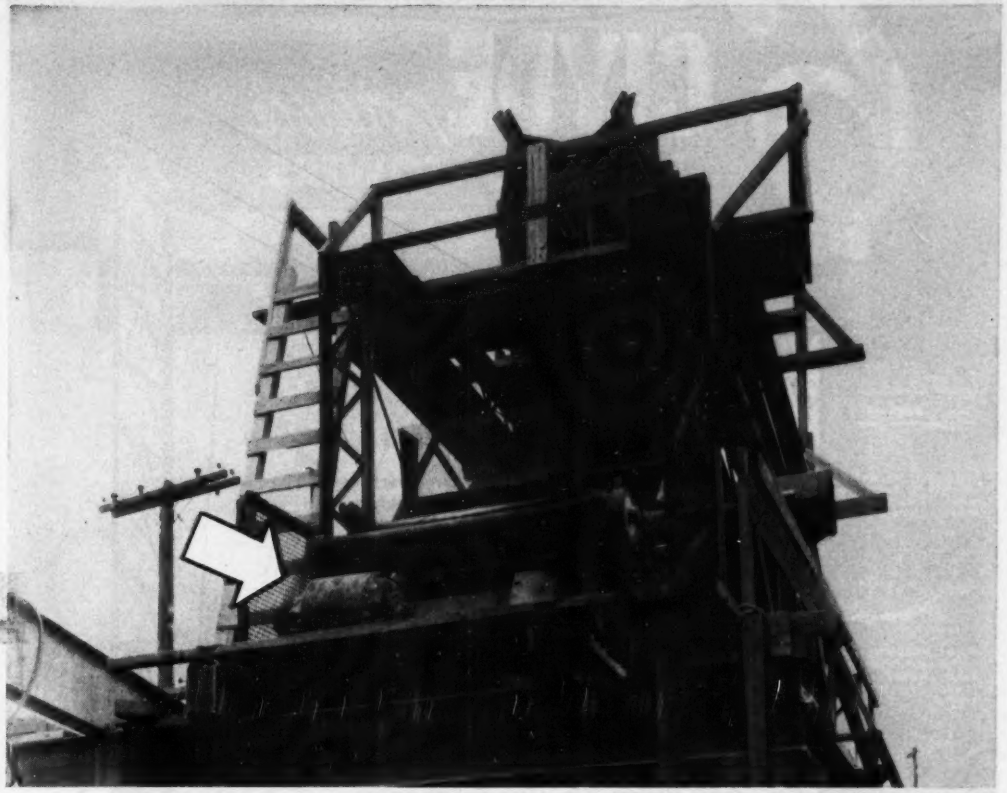


Photo courtesy M. A. Gammino Construction Co.

Where grommet V belts are outlasting others 6 to 1

B. F Goodrich grommet V belts cut costs 20 to 50%

THOSE three V belts run a rock screen that shakes down 1000 tons of rock a day. Ordinary V belts failed in one month because the drive whips and vibrates with such terrific force that the belts came apart at the sides.

B. F. Goodrich grommet V belts were installed six months ago, show no signs of giving any trouble. Here's where that extra strength comes from:

No cord ends—A grommet is endless, made by winding heavy cord on itself to form an endless loop. It has no overlapping ends. Because most of the failures in ordinary V belts occur in the region where cords overlap, the endless cord section in a grommet V belt eliminates such failures.

Concentrated cord strength—All of the cord material in a B. F. Goodrich grommet multiple-V belt is *concentrated* in twin grommets, positioned close to the driving faces of the pulley. No layers of cords to rub against one another and generate heat; cord and adhesion failures are reduced.

Better grip, less slip—Because a grommet is endless, a grommet V belt is more flexible, grips the pulleys better. Size for size, grommet multiple-V belts will give ⅓ more gripping power, pull heavier loads with a higher safety factor.

Only B. F. Goodrich has the grommet!—No other multiple-V belt is a grommet V belt (U. S. Patent No. 2,233,294). Now available in C, D and E sections. See your local B. F. Goodrich distributor. Ask him to show you his "X-ray" belt that illustrates grommet construction clearly. *The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio.*

Grommet V Belts BY

B.F.Goodrich

RUBBER FOR INDUSTRY

THE E & F CONSTRUCTION CO., INC.
OF BRIDGEPORT, CONN. USES . . .

6 CLYDE *portable* BUILDERS TOWERS

Tower may be loaded on truck or towed on trailer wheels which attach to tower base.

Tower is quickly and easily assembled, and cable reeved while tower is on the ground.

Tower hoist quickly and easily raises tower into position. No outside crane is needed.

on the PHINEAS T. BARNUM HOUSING PROJECT

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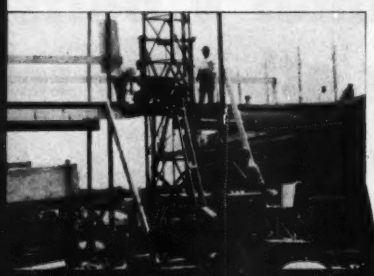
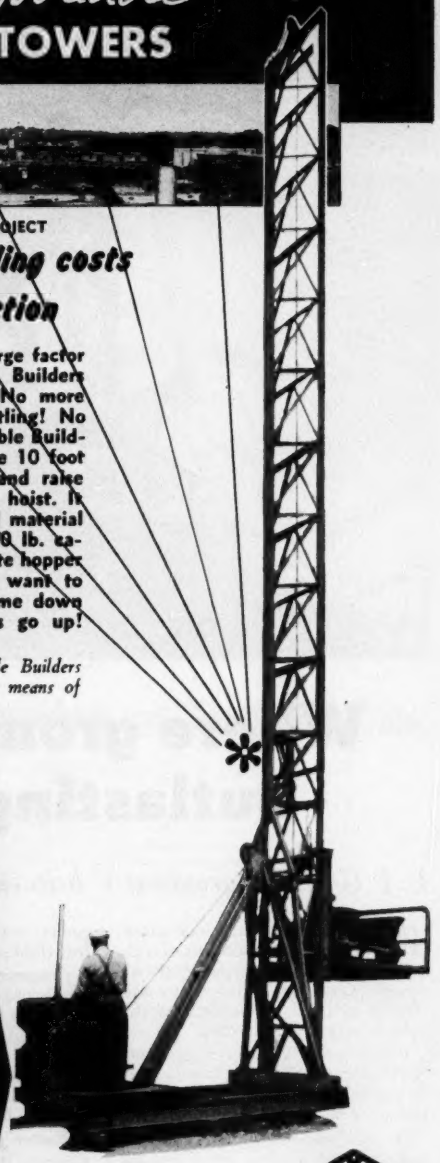
Where material handling costs are a large factor the preference is for Clyde Portable Builders Towers! No more costly timbers! No more wasted labor in erecting and dismantling! No more costly delays! With a Clyde Portable Builders Tower two men easily assemble the 10 foot tower sections while on the ground and raise it into operating position with its own hoist. It is ready to go . . . cutting costs on all material handling work. A safety brake, a 2,000 lb. capacity tower derrick and ½ yard concrete hopper bucket are optional equipment you'll want to investigate! And remember, costs come down when Clyde Portable Builders Towers go up!

Here's double economy: One Clyde Portable Builders Tower supplies materials to two buildings by means of short runway at floor level height.





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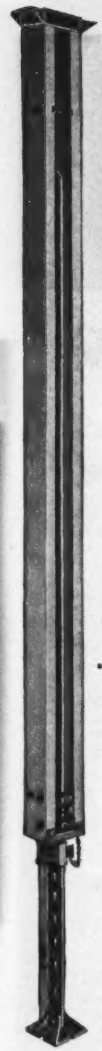

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Volume 33
Number 3

CONSTRUCTION METHODS AND EQUIPMENT

ESTABLISHED 1919

MARCH 1951

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ON THE COVER—Along the Delaware River, a Lima Paymaster crane hoists a set of leads to drive steel sheeting and piling for new approaches to the toll bridge between Easton, Pa., and Phillipsburg, N. J. The 13-yr-old structure is being revamped by Union Building & Construction Co., Passaic, N. J., under a $962,000 contract.—A. L. Christoffers Photo

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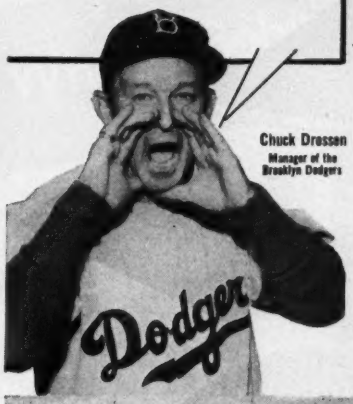

Chuck Drossen
Manager of the Brooklyn Dodgers

'INCOR' SPEEDS COMPLETION OF MIAMI STADIUM

BASEBALL'S NEWEST SPRING-TRAINING CENTER

● "Finest structure in minor-league baseball," says Walter F. O'Malley, Dodgers' President, of beautiful Miami Stadium, new Spring-training base of the Brooklyn Dodgers.

With a grandstand seating capacity of 9,500 and room for 7,500 in bleachers and temporary stands, Miami Stadium offers every spectator an unobstructed view of the field. To speed completion, the contractor used 'INCOR' 24-HOUR CEMENT in concreting the 6 x 6 ft. columns anchoring roof trusses and for foundations of eight 140-ft. light towers. Result, job completed *three weeks ahead of schedule.*

Another instance of maintaining schedules against an imminent completion date, by taking full advantage of always-dependable 'Incor'*—America's FIRST high-early strength Portland cement.

*Reg. U. S. Pat. Off.

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PUT YOUR LOAD ON A PRIME-MOVER! — *AND* GO!

These improvements bring greater service and lower up keep!

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* Dependability

Euclids are engineered for the job . . . built for efficient, long life performance in off-the-highway service. In mines and quarries, on construction and industrial jobs, "Eucs" have earned their reputation for durability and low cost operation.

Plenty of power . . . large capacity for bigger loads . . . body designs for all types of materials . . . earth, ore, rock, or coal. Rear-Dump Euclids range in capacity from 10 to 34 tons, have diesel engines from 125 to 400 h.p. Bottom-Dump Euclids have capacities of 13 to 50 cu. yds., 20 to 40 tons with diesel engines to 300 h.p.

Repeat orders prove customer satisfaction. Owners say that "Eucs" actually cost less to own than any other hauling equipment. Euclid dependability will pay off on your present or future jobs. Write for complete information on the Euclid line, or call your distributor today.

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MORE PROFIT PER LOAD

EUCLIDS *Move the Earth*

B.F.Goodrich

Hauling giant loads over blasted rock this B. F. Goodrich tire outlasts them all

IN ROAD contracting service in Tennessee, North Carolina and Virginia, the equipment pictured above is engaged in the tire-killing business of working its 32,000 pounds over the sharp rock of blasted terrain. Add a total load weight of 16 cubic yards of rock and earth, and it's easy to understand why bruises and blowouts make off-the-road tires a major cost item in such equipment.

Such was the story, at least, until B. G. Young & Sons of Johnson City, Tenn., owners of the fleet, turned to B. F. Goodrich *double nylon shock shield* tires to combat the high cost of tire mortality in such rugged service. Since then, costly road delays and work interruptions have been cut to a fraction of what they had formerly considered normal. The BFG Universal tires shown above, for example, have been in service for well over a year—*and not one has yet been removed from its wheel.* Mr. B. G. Young says, "The service we obtain from B. F. Goodrich tires with nylon shock shield is far and beyond anything we have ever experienced before."

Only B. F. Goodrich off-the-road tires have the *double nylon shock shield.* (It's patented.) Layers of nylon cord, built between the tread and body plies, shield the cord body by smoothly distributing shocks and strains. This plus factor of extra mileage and service hours in BFG tires is yours at no extra cost. Then, too, because there's a specially-designed deep tread for every need, you can look forward to good traction far beyond the time when ordinary tires must be changed over to service on free-rolling wheels.

So see your B. F. Goodrich dealer. Specify BFG tires for your new equipment. Enjoy longer tire service and lower overhead offered you by *The B. F. Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

ELIMINATE THE SHOCK OVERLOADS

NORTHWEST ADVANTAGES MEAN LOWER OPERATING COSTS

BEFORE THE DAMAGE IS DONE!

Protective devices at this point (between the engine and operating machinery) act after the shock load has passed through shafting and gearing. The Northwest Cushion Clutch catches the overload caused by the inertia stored in the rotating parts ahead of the engine.

● THE Northwest Cushion Clutch in the Main Drum Clutch eliminates *shock overloads before* the overload reaches the machinery, not *after* they have been carried through the machinery with resulting strain and possible damage.

The Northwest Cushion Clutch reduces overloads on the drum shaft and associated parts. It results in reduced frequency of adjustments. It lengthens machine life and puts money in your pocket by reducing wear and tear.

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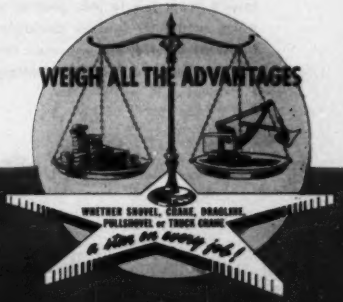
Your Northwest is a real Rock Shovel and if you have a real Rock Shovel you never have to worry about output in any other kind of digging.



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Barber-

MODEL 374

HEAVY-DUTY LONG-REACH PORTABLE CONVEYOR

ONE MAN

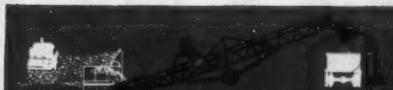
high-capacity loading, unloading, stockpiling of all bulk materials

Here is a pneumatic-tired portable conveyor with capacities from 150 to over 425 tons per hour. The B-G 374 can be towed from job to job, pile to pile, and has all the flexibility in use of smaller portable conveyors. It is built for heaviest service, yet one man can operate it to load, stockpile and unload far more tonnage per day than with any other truly portable conveyor. The 374 will handle sand, stone, wet concrete, coal—any bulk material—at a cost so low that every aggregate producer, contractor, City, County or State Highway Department handling large quantities of materials, should get the full details now on this new heavy-duty machine.

see your BG distributor

Greene

150 to 425 TONS/HOUR



The 374 conveyor can be equipped with vibrating screen to reject over-size while loading or stockpiling.

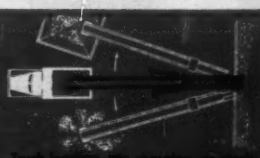
The 374 is the heavy-duty Portable. It can build high, extensive storage piles to store more material in restricted areas; it can keep up with high production operations such as elevating materials to crushers, surge storage bins, etc.; it can load or unload cars or trucks with new standards for speed and low cost. Combined with over-the-road portability, these factors offer appreciable savings in manpower and operating expense.

VERSATILE...

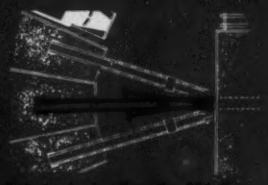
Here are a few examples of what the 374 Conveyor, with its complete line of accessories, including feeders, vibrating screens, discharge spouts, loading hoppers, etc., can do for you in your heavy-duty bulk material handling operations.

Wide reach and high discharge for high, extended storage piles.

Low mast clearance, heavy-duty oscillation bearing axle, pneumatic tires, for fast over-the-highway towing.

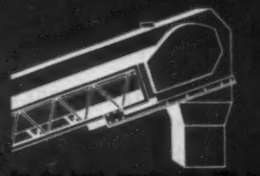


Truck loading, car charging, or stockpiling without moving the conveyor is possible with the 374 unloading direct from cars.



Swivel wheels allow the 374 Conveyor to swing to load trucks direct or to outlet storage.

Equipped with hopper, the 374 can elevate or convey wet concrete direct to forms.



For dry batch transfer, the 374 is equipped with hood to prevent loss of materials in delivery to trucks.

send coupon for details

Available in belt widths of 18", 24" and 30", in lengths from 30' to 60', the 374 can be invaluable to you in these days of restricted manpower and the need for high production operations. Fill in and send this coupon for your copy of the 374 Bulletin.

BARBER-GREENE COMPANY
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187

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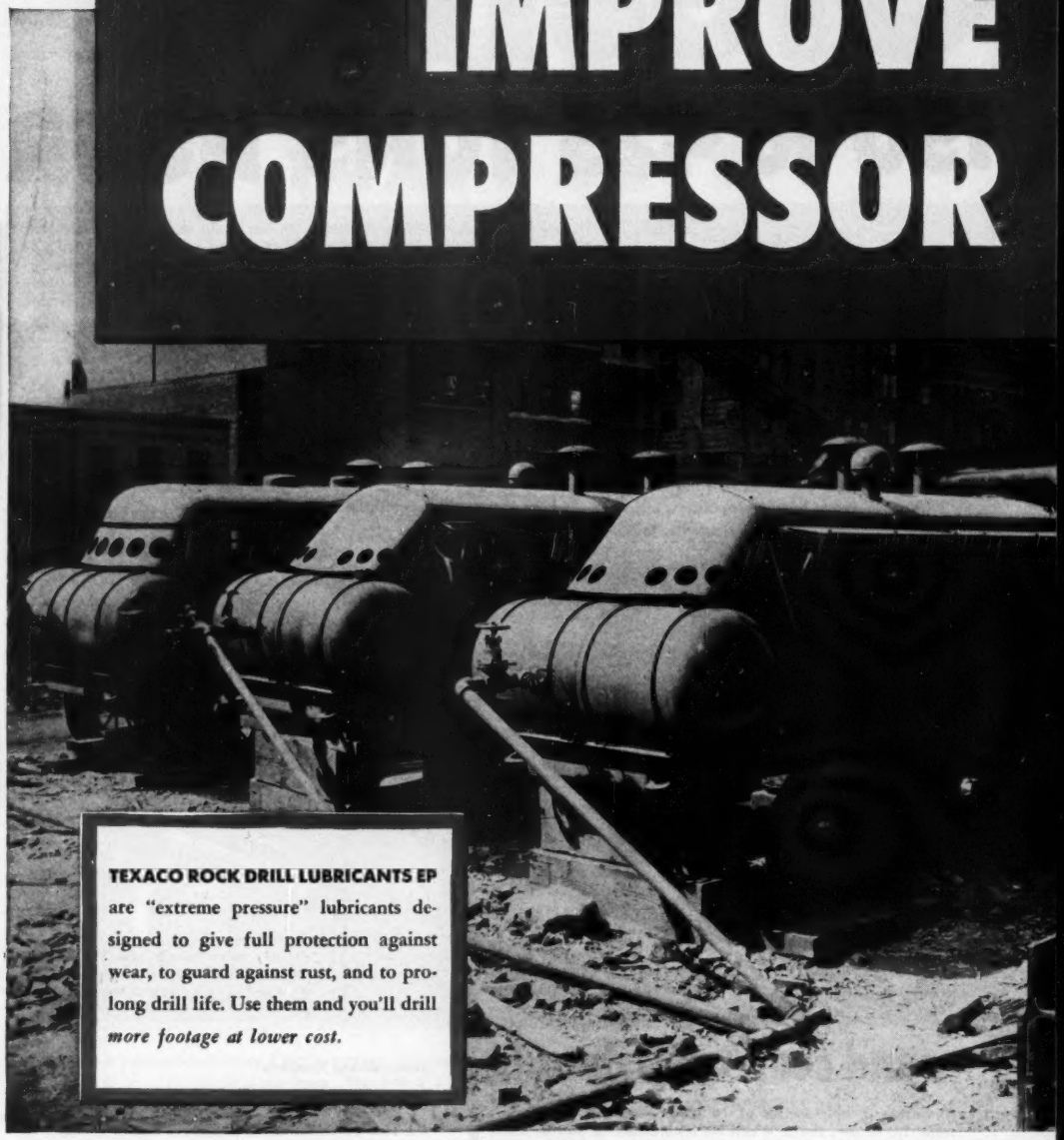

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TUNE IN . . . TEXACO presents MILTON BERLE on television every Tuesday night. METROPOLITAN OPERA radio broadcasts every Saturday afternoon.

TEXACO

TEXACO

YOUR PERFORMANCE

. . . by using the TEXACO AIR COMPRESSOR OILS designed for YOUR operating conditions

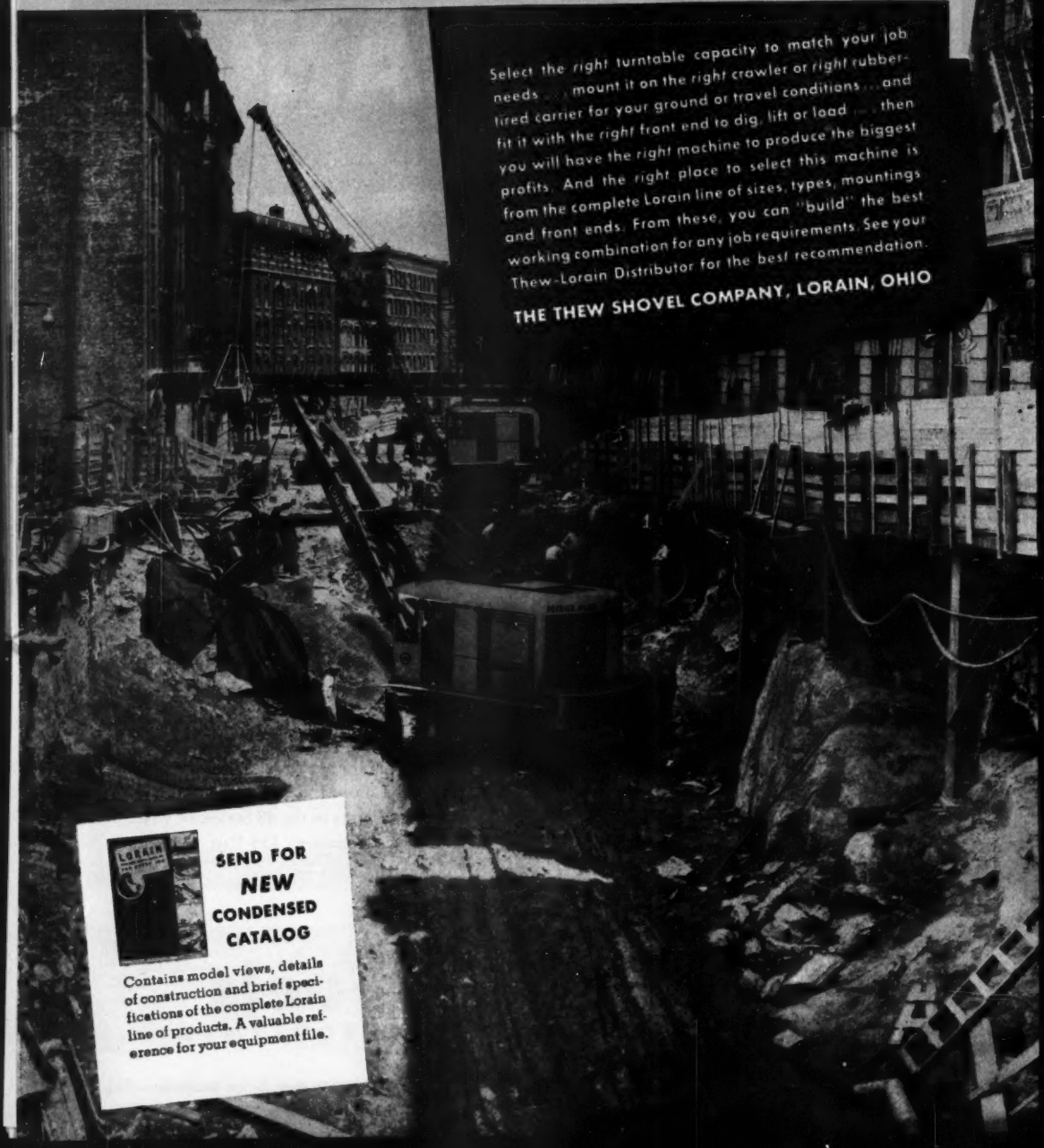
DIFFERENT air compressor operating conditions give rise to different operating problems—each of which calls for a special type of oil. By using the proper Texaco air compressor oil, you can overcome *your* difficulty, assure efficient compressor operation, reduce wear and maintenance costs. For example—

1. TO OVERCOME RUST, use Texaco rust-inhibited air compressor oils. They keep compressors and systems rust-free whether running or idle.
2. TO OVERCOME CARBON AND GUM, use Texaco heavy-duty air compressor oils. They have special detergent properties and are highly oxidation-resistant—will keep compressors clean under extreme operating conditions.
3. TO OVERCOME "WET CYLINDER" WEAR, use Texaco compounded air compressor oils. They resist the washing effect of moisture of condensation.
4. TO OVERCOME "NORMAL" OPERATING DIFFICULTIES, use Texaco straight mineral air compressor oils. They assure clean operation and reduce wear.

Your Texaco Lubrication Engineer will gladly help you select the right oils to assure you the most efficient compressor operation. Contact him through the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd St., New York 17, N. Y.

Lubricants and Fuels
FOR ALL CONTRACTORS' EQUIPMENT

5 STEPS TO SELECTING THE *BEST* SHOVEL-CRANE



Select the *right* turntable capacity to match your job needs . . . mount it on the *right* crawler or *right* rubber-tired carrier for your ground or travel conditions . . . and fit it with the *right* front end to dig, lift or load . . . then you will have the *right* machine to produce the biggest profits. And the *right* place to select this machine is from the complete Lorain line of sizes, types, mountings and front ends. From these, you can "build" the best working combination for any job requirements. See your Thew-Lorain Distributor for the best recommendation.

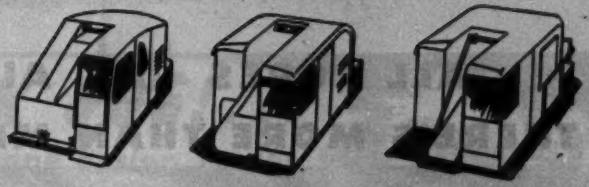
THE THEW SHOVEL COMPANY, LORAIN, OHIO

SEND FOR *NEW* CONDENSED CATALOG

Contains model views, details of construction and brief specifications of the complete Lorain line of products. A valuable reference for your equipment file.

1 SELECT THE *BEST CAPACITY* TO FIT YOUR JOB...

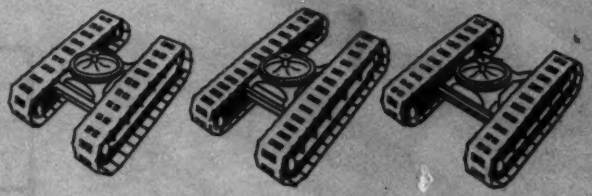
Select from six "Series" of Lorain machines... in ½ to 2-yard classes, including an extensive range of crane capacities up to 45 tons. All Lorains are rated safely and conservatively in accordance with U.S. Government Standards.



TL "SERIES" | 41 and 50 "SERIES" | 79-80-820 "SERIES"

2 SELECT THE *BEST CRAWLER* FOR WORK AND TRAVEL NEEDS...

For crawler jobs, you get more selection in the Lorain line. For shovel or general-purpose-work, select standard lengths... for crane-dragline duty, select extra-long crawlers with greater soft-ground flotation...for trenching or pipelining, select extra-wide crawlers to straddle trenches without cave-ins.

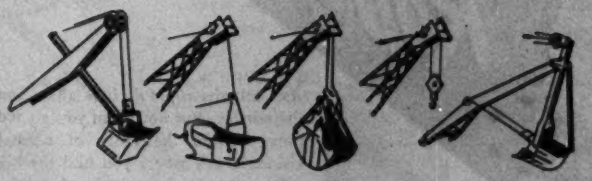


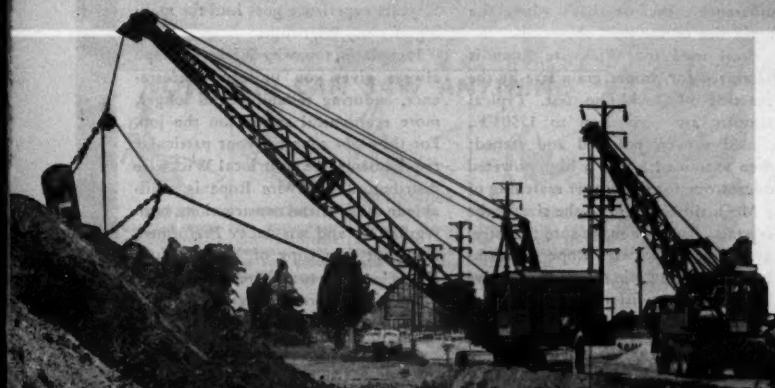
3 SELECT THE *BEST RUBBER-TIRE MOUNTING* FOR MOBILITY...

For greatest mobility, choose from the *world's greatest selection* on rubber. Two-engine Moto-Cranes in 2 or 3 axle types, 4 or 6-wheel drives—speeds up to 33 mph—in 10, 15, 20, 25, 35 and 45 ton capacities. Single-engine Self-Propelled machines in 2 or 3 axle types—2 and 4-wheel drives—speeds up to 8 mph.

4 SELECT THE *BEST FRONT END* TO DIG, LIFT OR LOAD...

Then equip your Lorain with one of five interchangeable front ends... shovel, crane, dragline, clamshell or hoe...and you're in business for profits. Interchangeable booms prepare you for any and all kinds of jobs, present and future.





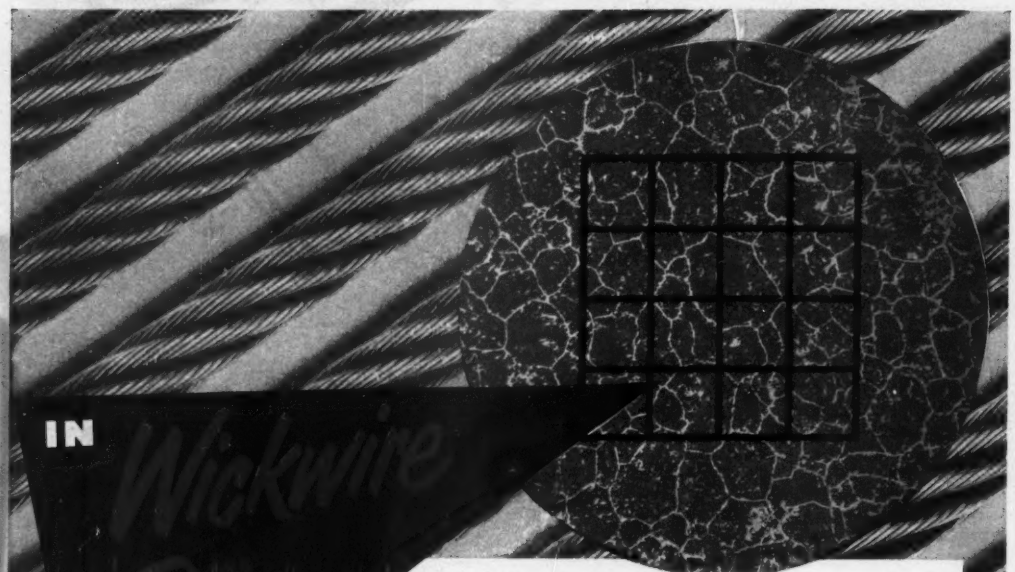
5 SELECT THE *BEST*, BE SURE IT'S A LORAIN!

Lorains move more material, faster, at lower costs—because of the advanced design features you would expect from our 51 years of experience... plus quality manufacture that has kept many Lorains on the job for 20 to 30 years...all backed by your Thew-Lorain Distributor... always nearby to keep your Lorain producing profits.

THE THEW LORAIN®

SHOVELS • CRANE • DRAGLINE • HOES • CLAMSHELLS • MOTO-CRANES

ALL ROPES look ALIKE... but THERE'S MORE THAN MEETS THE EYE...



Rope wire viewed under a microscope with 100 magnification and the correct McQuaid-Ehn grid superimposed and matched to the sample for classification.

Yes, all wire ropes *do* look alike...on the outside. But not when you go 100 times beyond the range of normal vision. That's where you find the big difference... because that's where the grain size of the steel shows up.

Steel used for Wickwire Rope is measured for proper grain size by the exacting McQuaid-Ehn test. Typical samples are carburized to 1750° F., cooled slowly, polished and etched; then examined under a high-powered microscope for the proper matching of a McQuaid-Ehn grid to the size of the crystals. Thus, we make sure that steel going into Wickwire Rope conforms to the definite grain size that will give longest, most satisfactory service.

Such quality control of basic properties is possible only with a company like Wickwire...where manufacture is integrated from molten metal to finished rope...where the know-how of 52 years experience goes into the making of every wire rope.

It explains, too, why Wickwire Rope always gives you uniform performance, enduring reliability and longer, more economical service on the job. For the *right* rope for your particular requirements, see your local Wickwire distributor. Wickwire Rope is available in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed. For your free copy of "Know Your Ropes" write to: Wire Rope Sales Office, Wickwire Spencer Steel Division of C.F.&I., Palmer, Mass.

WICKWIRE ROPE

CF&I SUBSIDIARIES

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. EXECUTIVE OFFICE—500 Fifth Avenue, New York 18, N. Y.

SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Casper • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Houston • New York Odessa (Tex.) • Philadelphia • Phoenix • Salt Lake City • Tulsa

PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California

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It's Done Easier, Faster, More Economical When You SAW Before BREAKING with a Clipper® CONCRETE SAW

Model C-139 Power Propelled

Model C-75 Tops in Performance

Model C-20 Electric Powered

● For cutting Streets, Sidewalks, Building Floors, Airport Runways, CLIPPER is the fastest, most efficient Concrete Saw ever designed. Score precision-straight, smooth edges 1/4 to 1/2 the depth, then break for patches, trenches.

● SAVE TIME
● SAVE MATERIAL
● NO ROUGH EDGES

NOW YOU CAN SAW ANYTHING

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TRENCH
Gas, Water, Sewer, Electric, Telephone, new installations or old ones repaired

CONTRACTION JOINTS
Highways, Streets, or Building Floors precision cuts eliminate hand tooling

DRIVES—WALKS
Prove the job can be small and still make concrete sawing profitable

GENUINE CLIPPER DIAMOND BLADES

Regardless of the Material you plan to Cut... Limestone, Flint, Gravel Aggregate Concrete Green or Well Cured, or Asphalt... there's a Clipper Diamond Blade to cut fast and economically.

Experience Proves A Concrete Saw Must Have These Clipper Features

1. Clipper "No Bind" Floating Three Point Suspension Automatically protects blade.

2. Positive Screw Feed Instant control raises or lowers blade smooth, easy.

3. Adjustable Depth Lock Set this handy stop for whatever depth desired.

4. Patented Spray Control Its value is measured in increased Blade Life.

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You Can Test—Actually Try A Clipper Concrete Saw On Your Job Without Obligation. It's Your Guarantee Of Perfect Performance.

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Send FREE—literature, information, and prices on the NEW—CLIPPER CONCRETE SAWS 3C

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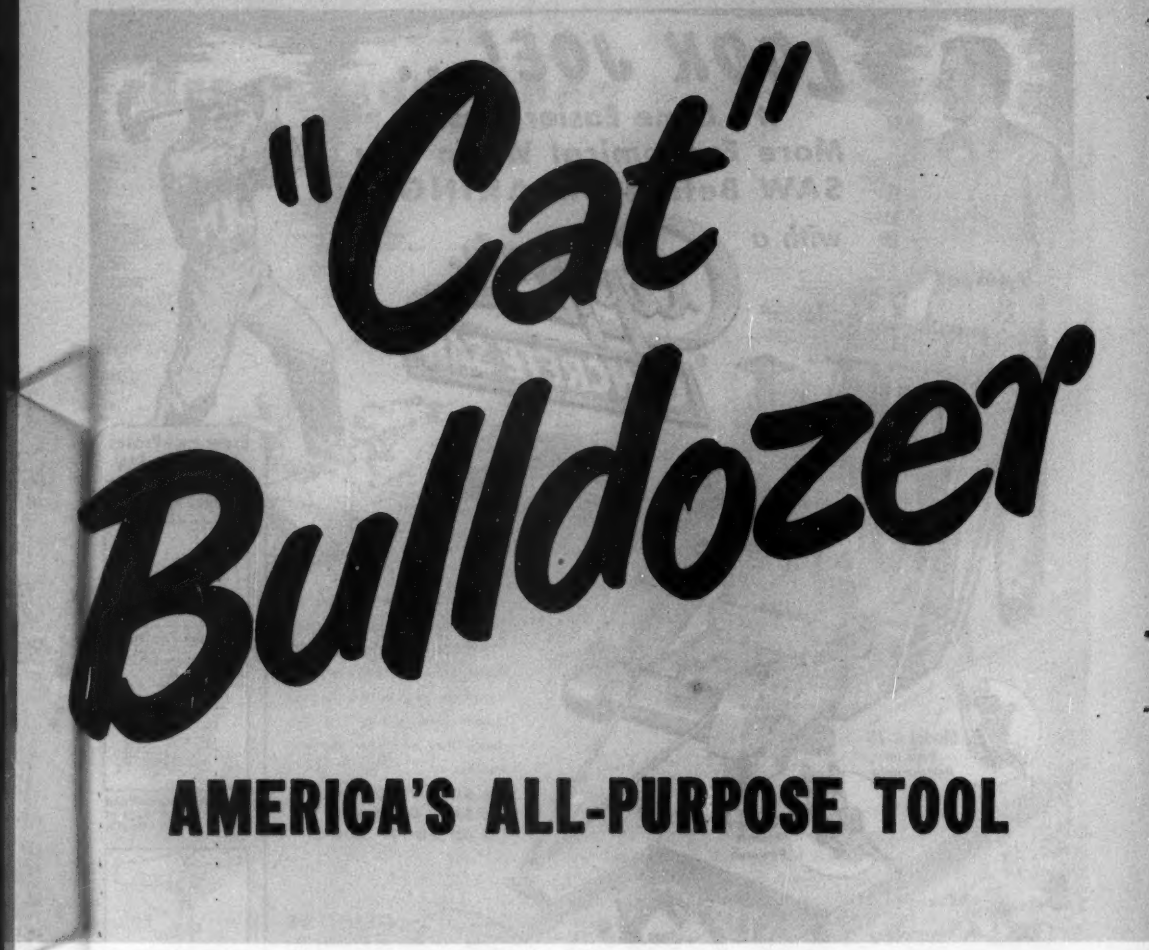


"Cat" Bulldozer

AMERICA'S ALL-PURPOSE TOOL

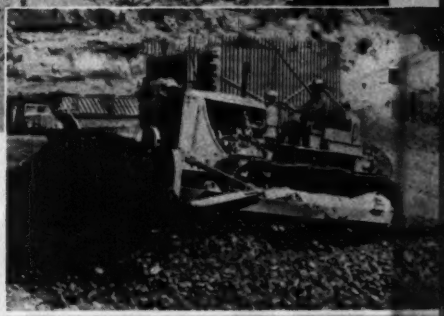
W. C. GREEN counts on his versatile "Caterpillar" D7 Tractor with matching 'dozer to pinch-hit on a dozen assignments when the going gets rugged at the Toketee Falls project in Oregon. "This is a straight 'Cat' outfit," he says. "Wouldn't have anything else. I like the dependability and performance—it's built to take it and to give a good day's work every day!"

These machines give you matched design—tractor and 'dozer built to work together. This rugged team is a bear at meeting work schedules. Sturdy construction and quality materials enable it to keep punching full time without down-time, and the special steel cutting edge of the blade hammers through the toughest going. Most important of all, the precision methods used in "Caterpillar" factories build extra years of life into these tools.

For help with your equipment problems, see your "Caterpillar" dealer *now*. Today's expanding military program has high priority. But it is recognized that our national preparedness depends upon stepped-up civilian production too. We must have more lumber, coal, food and essential ores. We must continue to build and improve America's vital network of highways. So your "Caterpillar" dealer is especially interested in meeting your needs—through equipment replacement and by exercising his working partnership with you to keep the machinery you have *on the job*.

CATERPILLAR, PEORIA, ILLINOIS

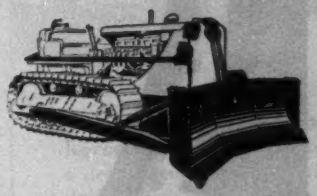
This No. 7A "Cat" 'Dozer is ruggedly built to bull through heavy boulders, doing clearance on the Toketee Falls project, Oregon. It also does tamping, ripping, and pioneered 5 miles of road for a power line on this essential job.



The same "Caterpillar" Bulldozer is so easily controlled it handles finishing jobs on the downstream side of the dam. After tamping clay core, it is now spreading gravel and sand to tie the clay in on the downstream side of the Toketee project. This tool is tough and maneuverable—stands up under the pounding of a 16-hr. day. Price of a standard "Caterpillar" D7 Tractor is $11,010; No. 7A Bulldozer, $1,975; No. 24 Cable Control, $750, f.o.b. Peoria. Prices subject to change without notice.

"CATERPILLAR" BULLDOZER EXTRA FEATURES

1. Tractor and 'dozer *broken to harness*, and a size for every need.
2. Moldboard curvature for active, *rolling*, higher production loads.
3. Box section side arms — extra thick at points of greatest stress.
4. Choice of straight or angling type of blade, simple to maneuver and easy to adjust or detach.
5. Your choice of hydraulic or cable controls.
6. The power of the "Caterpillar" Diesel Engine is geared to blade *capacity*.



NEW ADDITION TO 'DOZER LINE

Here's a specialist that can step up production and cut costs. It's the brand new No. 8U 'Dozer for use with the "Caterpillar" D8 Tractor, with cable control. Working best in loose or light material, the end portions of the blade extend forward to form the U, enabling it to drift large loads for longer distance without spillage. The No. 8U is built to the same high standards of strength and long life as the other "Caterpillar" Bulldozers. The versatility of this new tool gives it excellent performance on all kinds of 'dozing jobs, from stockpiling to pioneering.

CATERPILLAR

DIESEL ENGINES · TRACTORS · MOTOR GRADERS · EARTHMOVING EQUIPMENT

Velvetouch All-Metal Friction Products are Standard Equipment with the Leaders

because

VELVETOUCH LASTS LONGER

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And Velvetouch lasts longer because it's all-metal.

That's why leading tractor and earthmoving equipment manufacturers use Velvetouch. They specify Velvetouch wherever heavy duty operation puts an extra load on clutch plates, facings and brake linings. Because they know from experience Velvetouch delivers dependable, uniform service that keeps equipment off the repair rack and on the job.

Insist upon genuine, all-metal Velvetouch friction products on your next replacement order . . . and prove to yourself the extra service . . . the extra savings you get with Velvetouch.

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over 25 years of service 1924-1951

Velvetouch

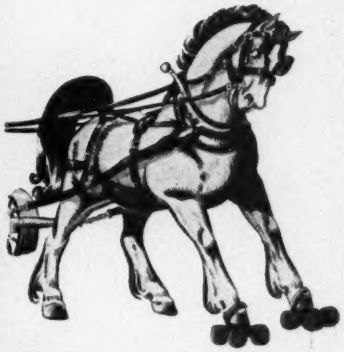
THE S. K. WELLMAN CO. • 1374 E. 51st ST. • CLEVELAND 3, OHIO

No matter how you say it

It Comes Out the Same

Last Year – This Year – Next Year

in 1940 we said

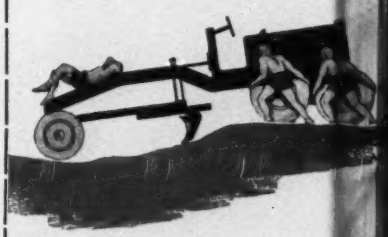


A motor grader without power on the front wheels is like a horse with roller skates on his front feet.

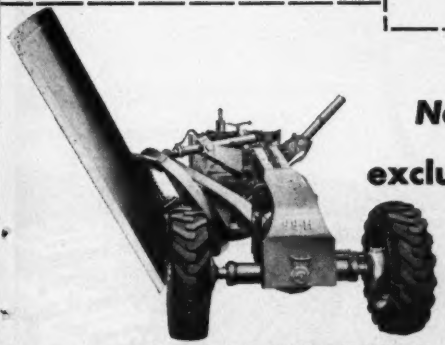
in 1945 we said

It's not in the cards for a grader with rear drive to equal the performance of one with All-Wheel Drive.

in 1950 we said



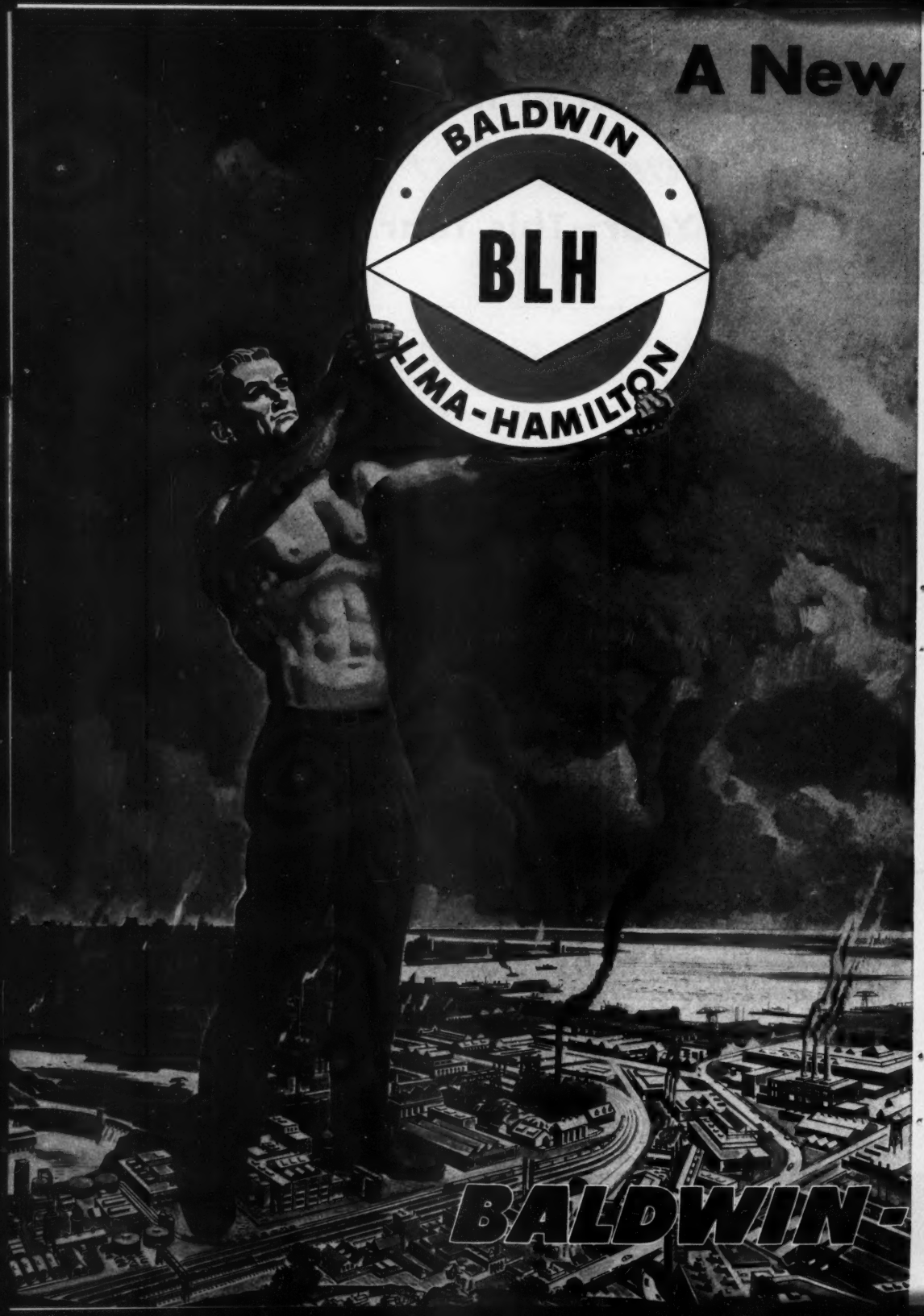
Don't handicap your horsepower! No grader with a dead front end can possibly deliver maximum power-at-the-blade.



No two ways about it! **Austin-Western's exclusive All-Wheel Drive goes more places . . . does more things . . . moves more material, farther and faster.**

AUSTIN-WESTERN COMPANY, AURORA, ILL., U. S. A.

Austin-Western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LIMA-HAMILTON
BALDWIN-

Symbol of Service to Industry

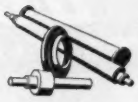
Representing the combined facilities of two of America's leading suppliers of industrial machinery and equipment, this new Baldwin-Lima-Hamilton symbol is backed by many decades of experience, a progressive and continuing research program, and the most modern engineering and manufacturing techniques. It represents the activities of eight plants spotted from coast to coast and numerous established sales outlets, strategically located for prompt, competent service.

The dispersion of B-L-H manufacturing facilities permits "local" handling and delivery on many items to the important producing areas. It also conforms to the projected pattern for better national defense.

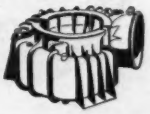
You have undoubtedly used many of the products offered by Baldwin, by Lima-Hamilton and by various subsidiaries, but you may not know, today, how well the Baldwin-Lima-Hamilton Corporation is equipped to supply your needs.

This array of products will suggest added opportunities for you to benefit from the expanded production-distribution-service facilities Baldwin-Lima-Hamilton now offers.

INDUSTRIAL LOCOMOTIVES—Gasoline, Diesel and Diesel-electric powered.

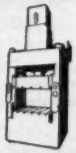


STEEL FORGINGS—Hammered and pressed steel forgings—rolled rings and flanges.

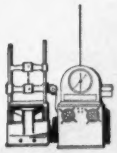


IRON CASTINGS—The most complex shapes, in weights up to 100,000 lbs.

NON-FERROUS CASTINGS—For corrosion resistance. Also special alloys available.



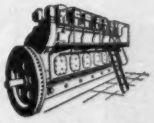
HYDRAULIC PRESSES—All types and capacities. Complete standard line.



TESTING MACHINES AND INSTRUMENTS—Universal, Fatigue, Stress Analysis.

STRAIN GAGES AND INSTRUMENTS—For an accurate picture of stress distribution.

CONCRETE TESTER—From 90,000 lb. units up to 1,000,000 lbs.



DIESEL ENGINES—For stationary and marine applications.

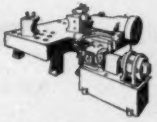
CRANES—Full range of capacities up to 110 tons, crawler and rubber mounted.

SHOVELS—Capacities from ¾-yd. to 6-yd. Design features increase output.

DRAGLINES—Available in variable capacities for economical earth-moving performance.

HYDRAULIC TURBINES—Francis, Propeller, Kaplan and Pelton types.

VALVES—Large valves for hydro projects and water works applications.



PIPE BENDERS—Speed and simplify the bending of large pipe in jobbing and repair shops.

Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Pennsylvania. **Plants:** Eddystone and Burnham, Pa.; Lima, Hamilton and Middletown, Ohio; Rochelle, Illinois; Greenwich, Connecticut; San Francisco, California. **Offices:** Chicago, Cleveland, Houston, New York, Philadelphia, Pittsburgh, San Francisco, St. Louis, Washington

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AIR POWER

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An addition to the IR CONTRACTORS' COMBINATION

NAL *New*

600-cfm PORTABLE COMPRESSOR

using a new advanced-design Rotary Compressor

Weighs only 9500 lbs
ready to run

Years ahead of any other large capacity portable

- **Amazing new GYRO-FLOW compressor . . . two-stage, oil-cooled rotary type without valves . . . without pistons, rings or rods . . . without clutch.**
- **Never gets hot . . . discharge temperatures less than 200°F under normal operating conditions.**
- **Matched to powerful, nationally-known General Motors diesel engine . . . takes full advantage of modern speeds.**
- **I-R AIR-GLIDE Capacity Control . . . the only automatic, step-less regulator that controls the air output smoothly over the full range from 0 to 100% capacity . . . all within a 10-pound pressure range.**
- **Weighs only 9500 pounds ready to run . . . as much as 20% less than other big-capacity portables.**
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by **Ingersoll-Rand**

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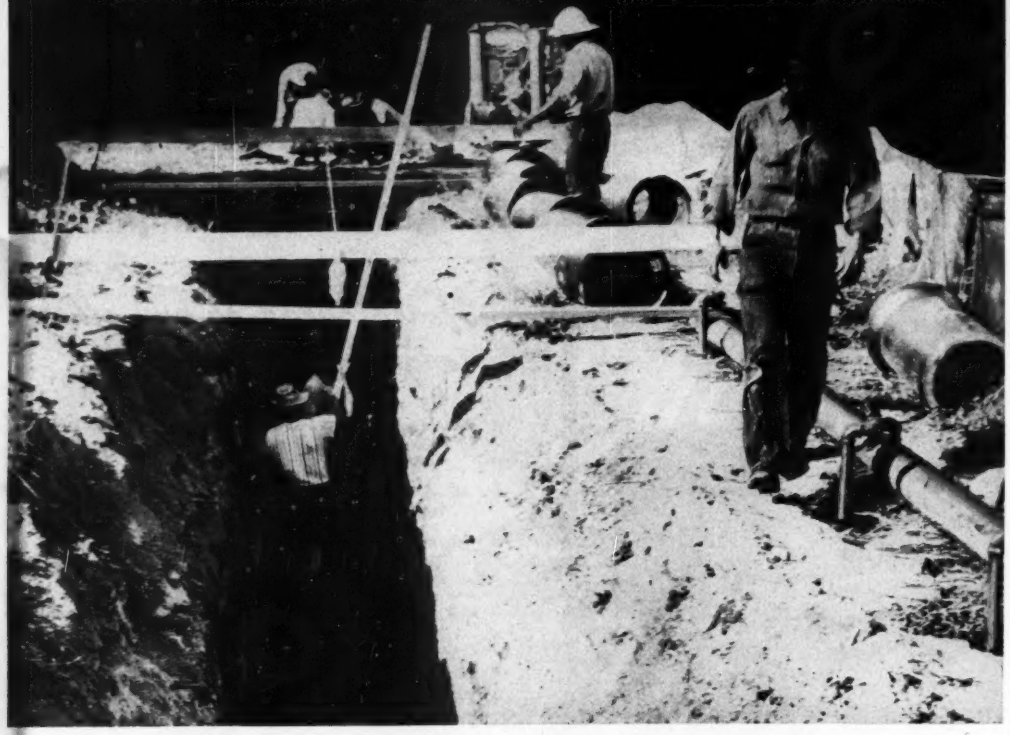
The portable compressor builder that many times before has set new standards

- **First Two-Stage Air-Cooled Portable Compressor**
- **First 500-cfm Portable that was really portable**
- **First Automatic Speed-Control of Capacity**
- **First and only MOBIL-AIR.**

594-2

Write or call your nearest Ingersoll-Rand representative for the full story.

8 OUT OF 10 CONTRACTORS ON TAMPA'S $9,000,000 SEWER SYSTEM ARE USING MORETRENCH WELLPOINT EQUIPMENT!



. . . And every one of the eight is a repeat customer. They know that with MORETRENCH they can count on

immediate dry results -
economical operation -
steady progress from start to finish.

It stands to reason: When so many contractors select Moretrench Wellpoint Equipment to predrain wet work, year in and year out, *it must be a time and money saver.*

We'll be glad to estimate on pumping your next wet job. Just contact our nearest office.

MORETRENCH CORPORATION

90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey

Canadian Representatives: Geo. W. CROTHERS Limited, Toronto, Ontario

See LECTRO-SAW before you buy!

BEATS ELECTRIC SAWS COSTING $50 MORE!

ABUNDANT POWER!

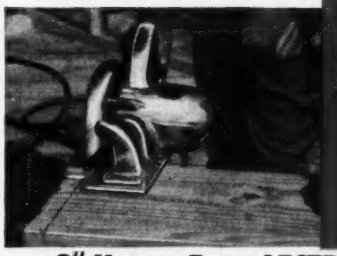
This LECTRO-SAW has extra power that means faster sawing. For example, in a mechanically-controlled speed ripping test, it outperformed saws costing $50 more!

EASY HANDLING!

Handle-to-blade dimension has been held to a minimum for easy control and greater cutting accuracy. Yet handle is close to center of gravity for good balance!

QUICK ADJUSTMENTS!

Depth and bevel adjustments are built-in, fast-changing. And two depth adjustments (front and rear) keep handle in comfortable wrist position, regardless of depth of cut.



8" Heavy-Duty LECTRO-SAW

(Cuts to $2\frac{13}{16}$" depth) **only $92.50**

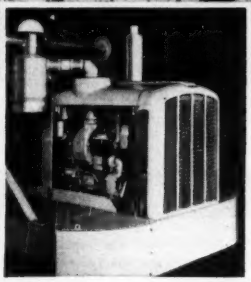
For a real eye-opener in performance, check an 8" Heavy-Duty LECTRO-SAW before you buy your next electric saw! You'll be amazed at its speed, power, easy handling, safety and low price. See your building supply dealer for a demonstration. Ask him how new Standard LECTRO-BLADES actually increase output of the Saw—and new Carbide-tipped LECTRO-BLADES cut transite and Cemesto Board 7 to 12 times faster than abrasive discs! Also ask about 6" Heavy-Duty at $56.50. Write for free catalog to: HOME-UTILITY Div., BLACK & DECKER Mfg. Co., Dept. H659, Towson 4, Maryland.

Professional Saws At Popular Prices!

ELECTRIC LECTRO-SAW SAWS

Products of HOME-UTILITY Div., The BLACK & DECKER Mfg. Co.

Capable of digging speeds up to 136 inches per minute, Parsons 250 Trenchliner owned by Vanderver and Christian, Tyler, Texas, is powered with a 3-cylinder GM Series 71 Diesel engine delivering 89 H.P. at 1800 RPM. Mr. W. N. Christian says, "We are well pleased with this machine and the GM Diesel engine is giving excellent performance."



Faster Way
TO DIG A DITCH

THIS General Motors Diesel-powered Parsons 250 Trenchliner, powered by a General Motors Diesel, took on the toughest kind of a pipe-trench job—8 miles of 42" trench, depth to 17 feet—through soil ranging from hard red clay to sand. Line of travel was from Lake Tyler to Tyler, Texas, through rough, hilly country, across numerous creeks with "soft" approaches.

Jobs like this are a "natural" for GM Diesels because of their more efficient 2-cycle operation. With power at every piston downstroke, these engines start at the press of a button—give instant response to widely fluctuating power demands—and cut fuel costs to the core.

Discover for yourself how General Motors Series 71 Diesels can step up your production and lower your operating and maintenance costs. Get all the facts from your local GM Diesel dealer or write direct to us.

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES... *Up to 275 H.P.* **DETROIT 28, MICHIGAN** MULTIPLE UNITS... *Up to 800 H.P.*

GENERAL MOTORS

DIESEL BRAWN WITHOUT THE BULK

GM GENERAL MOTORS DIESEL POWER

427,360 PAY YARDS in just 51 days

Months ahead of schedule, the main fill of Farmington Dam was completed—substantially lessening damage from historic 1950 winter floods which poured through much of the fertile San Joaquin Valley. Key factor in early completion was the *consistent production* of six Wooldridge Terra Cobras—the kind of *consistent production* which spells "PROFITS" on any earthmoving job. Rugged dependability and extreme simplicity of maintenance again paid off with minimum down-time. Accurate job statistics proved a 94.7% efficiency record for the Cobras. Thus, each machine made the most of its fast full-loading, quick dumping, and high speed hauling characteristics. Protect your next contract with the assured *consistent production* of Wooldridge Terra Cobras—proved for long or short hauls.

EQUIPMENT—6 WOOLDRIDGE TERRA COBRAS

PROJECT—Farmington Dam, California

LENGTH OF ONE-WAY HAUL—1960 to 4020 ft. (average haul 3,

TYPE OF WORK—Excavation and placing on the dam embankment

MATERIAL—Hard clay

AVERAGE LOAD—14.7 cu. yds. weighed on 41,340 lbs. scale (20 per cu. yd.)

TYPICAL PERFORMANCE—11 loads per hour on 3,000 ft. [illegible]

WOOLDRIDGE MANUFACTURING COMPANY

Sunnyvale, Calif. 5345 N. Winthrop Ave., Chicago 40, Ill.

WOOLDRIDGE

ANNOUNCING...

The NEW SHELL ROTELLA OIL

(Extra Heavy Duty Type)

"... exceeds every accepted performance standard for oils in its class"

OUTSTANDING PISTON CLEANLINESS

The new Shell Rotella Oil stands out in the very top bracket with respect to Piston Cleanliness, providing convincing proof of its ability to keep contaminants out of the critical zone in which wear is concentrated.

MUCH LOWER RING DEPOSITS

Ring-plugging tests are really tough, yet new Shell Rotella Oil came through stiff competition with a remarkably low ring deposit rating . . . far below the established passing mark!

GREATER ENGINE LIFE

Recognized laboratory engine tests are important in establishing qualifications of lubricants to meet strict requirements. More important to operators, however, is the *tremendous increase in engine life* and the consequent reduction in maintenance expense and time out-of-service that the new Shell Rotella Oil is contributing to fleet operation under today's conditions.

NEW SHELL ROTELLA OIL . . .

Stepped up cleaning action...

Even greater anti-wear protection

. . . anticipating the needs of today's high performance fleet engines

TODAY'S hauling conditions are imposing greatly increased demands upon fleet engines . . . and the lubricants selected to keep them running. At the same time these high-performance engines are expected to turn in ever-increasing mileage records between overhauls.

For these reasons, and because even greater performance will probably be expected as time goes on, the detergent-dispersant and anti-wear qualities of Shell Rotella Oil have been markedly increased.

Operators using Shell Rotella Oil in the past will find an even greater latitude in maintenance procedures.

4-WAY LIFE EXTENSION FOR BUSY ENGINES

1. Remarkable detergent-dispersant action

The ability to suspend contaminants has been deliberately stepped up in the new oil. Field tests on vehicles, in widely varying kinds of service, prove conclusively that this greater detergent-dispersant action extends mileage between overhauls.

2. Drastic sludge reduction

Operators who have been having sludge troubles . . . with clogged pump screens, burned out bearings, or clogged oil ways . . . are urged to find out for themselves how remarkably clean those engines will remain while using this new anti-sludge Shell Rotella Oil.

3. Positive Anti-acid action

New Shell Rotella Oil directly counteracts the acid action of fuel combustion products in the vital top-cylinder zone . . . with correspondingly great reduction in wear. This protection is extremely important in the operation of intermittently loaded engines.

4. Extends time between engine overhauls

New or reconditioned engines . . . operating on fuels of widely-varying quality . . . in all kinds of fleet service . . . have demonstrated an important extension of in-service time. *This gain results from improvement in several basic respects: freedom from sludge and ring-clogging, increased valve life and greatly reduced wear.*

SHELL

for all heavy duty fleet engines

HAZARD

LAY-SET PREFORMED

the Premium BRAND

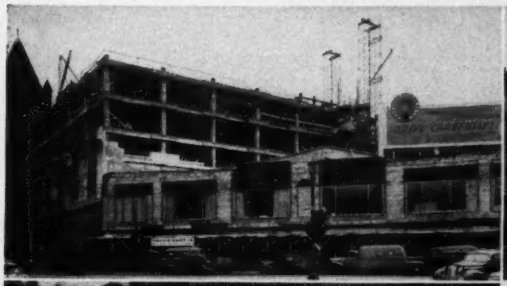
Only the finest is branded "*Premium.*" Only the best gets the blue ribbon for unequalled quality. Only one is recognized as the grand champion winner which sets the standards of excellence . . . whether it's beef on the hoof, a beauty contest winner, or a brand of wire rope.

HAZARD since 1846 has produced premium wire rope . . . made better so that it will last longer, handle safer, and cost less to use. LAY-SET Preformed has been used —with excellent results—in every conceivable type of wire rope service. Its satisfactory performance has proved LAY-SET's right to be called—"*the Premium Brand.*"

There is a HAZARD distributor near you to serve you with this premium brand of wire rope.

HAZARD LAY-SET PREFORMED
HAZARD LAY-SET
HAZARD LAY-SET PREFORMED
HAZARD LAY-SET PREFORMED
HAZARD LAY-SET PREFORMED

3 years— no down time



EVERY builder knows that if his hoist stops the job stops. That can mean mighty painful losses . . . in labor costs, time, and jammed-up operations. But Wm. Baumeister Construction Co. of St. Paul can tell you that hoist breakdowns are not necessary.

The job shown above—a new 6 story office building, plus refacing an older building—is a typically smooth Baumeister project. On this job and others, Baumeister has used Model 55 and Model 75 American General Purpose Hoists. In continuous use for 3 years, these hoists have *never lost a working hour for repairs.*

Take your choice of ten models, capacities from 600 lbs. to 40,000 lbs. single line pull. Your American Hoist distributor will help you get exactly what you need.

Modernize...economize...with

American Hoist
& Derrick Company
ST. PAUL 1, MINNESOTA

Mail this coupon

American Hoist & Derrick Co. 1101
St. Paul 1, Minnesota

● Please send catalog on

AMERICAN GENERAL PURPOSE HOISTS

☐ 5 to 40 H. P. ☐ 50 to 100 H. P.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

Watch this Blast

Machine-gun camera takes a photo every ⅓ second—shows what really *happens when a blast is shot.*

No wasted explosives gas

① *21 vertical holes, 9,700 pounds of dynamite ready to go.*

② *⅓ second later. See the rock "swell" at first instant of blast . . . but no sign of escaping gas.*

THIS was a typical ROCKMASTER blast by Fauzio Brothers at the Lehigh Navigation Coal Company's Nesquehoning, Pennsylvania stripping operation. Holes were 40 feet deep, with 18-foot spacing, 19-foot burden. The blast was initiated from the bottom of each hole, with ROCKMASTER Nos. 1, 2, 3, and 4 milli-second electric blasting caps.

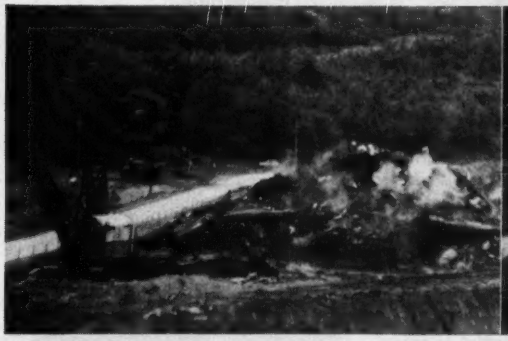
Whether your job calls for blasting rock, coal, ore, ROCKMASTER blasting means true *controlled force . . . controlled throw . . . controlled breakage.* Write today for your copy of the ROCKMASTER booklet showing how you can profit through the use of the correct numbers of the *sixteen* ROCKMASTER milli-second delay electric blasting caps teamed with the ROCKMASTER system of explosives choice and loading methods. Our technicians will be glad to assist you in applying ROCKMASTER to your operation.

GO!

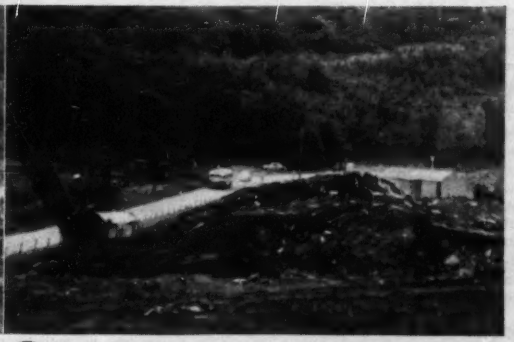
...No wild rock...even at the peak of the blast!

③ *⅛ second after Photo. No. 2. Rock going up... gases still confined where they do most work.*

④ *High point of the blast! Explosives gas has done maximum work.*



⑤ *As rock begins to fall, first traces of spent gases and smoke seep through broken rock. Burden completely shaken.*



⑥ *Rock ready for the shovel. Only three minutes after traffic was stopped it's on its way again.*

Rockmaster—Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES

"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

HERE'S WHAT USERS SAY ABOUT THE DEMPSTER-DIGGSTER—

"IT'S THE FASTEST, MOST EFFICIENT EXCAVATING TOOL I HAVE USED"

—A. J. METLER, *Contractor*

"During the past several years," Mr. Metler says, "I have owned and operated four conventional full revolving crawler and truck mounted shovels and cranes and know that they have a direct application to many types of excavating work.

"On the other hand, I have learned that the fast operation of the tricycle mounted Dempster-Diggster permits it to be used on certain types of work to a considerable advantage. Its mobility permits quicker transfer from one job to another.

"I have had excellent results from the Dempster-Diggster and consider it the fastest and most efficient excavating tool I have used."

Mr. Metler is one of the many contractors who has found the Dempster-Diggster to be "the fastest and most efficient excavating tool" available.

This speed and efficiency in excavation work is accounted for, mainly, by the Diggster's exclusive independent hydraulic crowd and hoist action, its hydraulic steering and wheel-type traction.

The power crowd permits bucket to keep digging until loaded . . . no digging with wheels. The hydraulic steering gives the driver sensitive, easy, finger-tip control. When accelerated, a one-handed twist of the steering wheel puts the machine in any desired position. By operating on rubber-tired wheels, the Diggster, of course, can move at the fastest possible speed on the job and to and from jobs.

The Type HL Dempster-Diggster is equipped for extraordinary high dumping. The bottom of bucket is 13 feet six inches above ground.

HERE IS THE NEW TYPE HL DEMPSTER-DIGGSTER shown excavating with a 1¼ cu. yd. (heaped) digging bucket. The Type HL Dempster-Diggster will dig through an 18 foot bank while the Type GRD digs through a 15 foot bank.

The Dempster-Diggster is a "must" for contractors, large or small operators alike.

The Dempster-Diggster has a 15 foot turning radius, is 20 feet long when bucket is in traveling position, and is nine feet and six inches in height.

Four standard interchangeable buckets of two types are available. Digging buckets with four bottom teeth in 1 and 1¼ cubic yard (heaped) capacities, and materials handling buckets in 1½ and 2 cubic yard (struck) capacities.

For fast, efficient operation in difficult terrain, the Diggster is available with crawler-type traction.

"I have not personally used the Dempster-Diggster mounted on crawler treads," Mr. Metler said, "but have seen it in operation on jobs adjacent to mine. I know it is a very effective tool and has many applications."

Construction men have found that on big jobs the Dempster-Diggster has no equal for working in tight places and for freeing big shovels for heavier work. The Diggster has an 8 foot 10 inch crowing reach, will dig through a 15 foot bank, and will dig 15 inches below grade.

Pound for pound, the Dempster-Diggster will out dig and out load any other available competing machine in tough going! Let us prove that statement!

Write today for complete information and prices. The Dempster-Diggster is a product of Dempster Brothers, Inc.

This is the type GRD Dempster-Diggster, which Contractor A. J. Metler considers "the fastest and most efficient excavating tool I have used." It is shown digging 15 inches below grade.

DEMPSTER DIGGSTER

DEMPSTER BROTHERS

331 SHEA BLDG.

KNOXVILLE 17 TENNESSEE

FOR THE BEST IN MOBILE CRANES YOU NEED A CRANEMOBILE

This BAY CITY Model 190-T61 CraneMobile, owned by Sere Erection Co., is setting an 18-ton steel truss in the framework of a new Memphis church auditorium. For other steel work, longer boom and jib was used but caused no delay as boom sections are pin-connected and furnished with socketed pendant cables.

Handle 25 ton loads gently and accurately

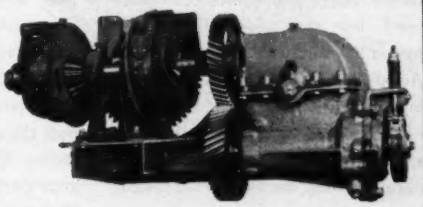
The big capacity of the "190" CraneMobile puts you out front on heavy lifts or long boom work. With both crane and carrier built by BAY CITY you'll have a nicely balanced crane with a low center of gravity for dependable, on-the-job performance. From every angle, the solid ruggedness is apparent. Look at the specially designed carrier with long wheel base for better roadability. It is amply powered and sturdily built to match the heavy-duty construction of the crane machinery. There are many reasons contractors prefer the BAY CITY built CraneMobile . . . let us show you why. Write for latest catalog or see your nearest dealer.

BAY CITY SHOVELS, INC.
BAY CITY, MICHIGAN

183

CHECK LIST
- 20-25 Ton Capacity
- Pin-Connected Boom
- Hi-Collapsible Gantry
- Independent Power Boom Hoist
- Precision Power Load Lowering
- Removable Counterweight
- Specially Designed Carrier
- High Road Speeds

This heavy duty independent boom hoist is of the self locking worm and worm wheel type operated by separate friction clutches to boom-up and boom-down only under power. Will readily handle boom and load. All controls conveniently located.



BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

Airco Hardfacing Alloys increase equipment work life 10 times

Worn machinery and equipment need no longer mean costly replacements. Today, surfaces rebuilt with Airco Hardfacing Alloys add many months to equipment life and, in many cases, improve the operating characteristics.

For example, a large contracting firm found that hardfaced manganese bucket teeth last two to six times longer than untreated teeth. Using Airco Self-Hardening Alloy, they lay a stringer bead along the edges of the bucket teeth. This alloy, designed to counteract impact and abrasive wear because of its tough, homogeneous characteristics, saves thousands of dollars in equipment work life.

But this is only one of the many Airco Hardfacing Alloys used in their welding shop to save time, trouble and money. They follow a conscientious program of hardfacing . . . a program that helps prolong equipment work life and prevents costly "down-time."

You, too, can enjoy these same time and money savings. Your nearby Airco office will gladly show you how these cost-saving Airco Hardfacing Alloys will help you with your particular problem.
Write today.

other AIRCO hardfacing alloys

AIRCOLITE No. 59 . . . For reclaiming bucket teeth and lips used in sand and gravel pits—dredge screens—pulverizer hammers—mixer blades, this cast alloy rod is recommended for application where abrasion resistance is particularly important. Deposit acquires a high polish in service, and maintains its high hardness at temperatures up to 800°F. Applied electrically or by gas process. Deposits test from 54-59 on Rockwell "C" scale.

AIRCOLOY No. 6 . . . For refacing exhaust diesel valves on "cats"—cranes—pumps and shovels, Aircoloy No. 6 gives excellent corrosion resistance . . . retains hardness and impact and abrasion resistance at temperatures above 700°F. . . . test from 43-47 on Rockwell "C" scale. While recommended for application by gas process, rods suitable for AC or DC electric application are available.

AIRCO TUNGTUBE . . . When building up grader blades—road plows—dredge pump cutters—scarifier teeth—churn drills, use tungsten carbide particles encased in a steel tube for application by either oxyacetylene method or electric arc—AC or DC. Used as a diamond substitute for earth removal and drilling operations. Hardness of tungsten carbide particles are over 80 Rockwell "C".

★ ★ ★

Air Reduction supplies Oxygen, Acetylene and other industrial gases . . . Calcium Carbide . . . and a complete line of gas cutting machines, gas welding apparatus and supplies, plus arc welders, electrodes and accessories. Ask us about anything pertaining to gas welding and cutting and arc welding . . . we'll be glad to help you.

AIRCO **AIR REDUCTION**

AIR REDUCTION SALES COMPANY • AIR REDUCTION MAGNOLIA COMPANY
AIR REDUCTION PACIFIC COMPANY
REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL
Divisions of Air Reduction Company, Incorporated
Offices in Principal Cities

One Source

FOR ALL YOUR STONE CRUSHING MACHINERY

If you have a big job to get underway, you can save a good deal of time and energy by buying all your Stone Crushing equipment from Traylor. Our large, modern plant . . . fully equipped to build the heaviest machinery with ease and dispatch . . . is so well arranged that each order receives personalized attention and follow through. We would welcome an opportunity to discuss your requirements without obligation. In the meantime, send coupon for free catalog on the complete line of Traylor equipment.

TRAYLOR ENGINEERING & MANUFACTURING CO.
329 MILL ST., ALLENTOWN, PA.

Please send literature as checked

☐ Bulletin 6120 on Traylor Stone Crushing Machinery
☐ Booklet describing Traylor's complete metal-working facilities.

*Name*_____

*Company*_____

*Address*_____

_____

SALES OFFICES: New York, N.Y.; Chicago, Ill., Los Angeles, Calif.
Canadian Mfrs: Canadian Vickers, Ltd, Montreal, P.Q.

Traylor

Rotary Kilns, Coolers and Dryers • Grinding Mills
Jaw, Reduction and Gyratory Crushers • Crushing Rolls

A "TRAYLOR" LEADS TO GREATER PROFITS

THE FINEST EVER BUILT

COMPARE THESE OTHER GMC EXTRA-DUTY FEATURES:

Full-Pressure Lubrication of all main bearing and piston pins • Synchro-Mesh Transmission • Tocco-Hardened Crankshaft • Cooler-Operating Rear Brake Drums • Husky 35-Amp. Generator • Airplane-Type Main and Rod Bearings • Lifetime Weathersealed "Six-Footer" Cab with Ventipane-Controlled Ventilation—*your choice of the widest variety of engine-body-chassis combinations, 9 smart new colors!*

LIGHT TRUCKS BY GMC!

Unsurpassed in horsepower—you've never seen ½- to 2-tonners like these—built for keeps from the rims up with many "big truck" features

THESE new lightweight champs are a lot more than just newly dressed-up models. They're built to carry you through the critical times ahead. To produce them, we threw away the book and started fresh.

Keep hauling years longer

The moment you put one of these GMC's on the road, you feel the surge of extra power that's turned out by their new engines — horsepower that's *unsurpassed* in the ½- to 2-ton truck field! This extra drive is due to such GMC features as new carburetion design, rotating Free-Valve action in the new "248" engine design that never lets carbon get set to steal power — Turbo-Top pistons that develop higher power without "knock" *even when using standard-grade gasolines!*

Feature upon feature from each individual model tells you these GMC's are built to stay young and free of trouble *from rims to roof.* Things like heavier axles, longer "pillow-action" springs, the protection of a built-in radiator overflow tank—all typify the plus values in these new trucks.

Greater Safety—More Comfort

Touch the brakes. Feel the "Twin Action" of the wider hydraulics—now included on all 1½- and 2-ton models in this safer line of new light trucks!

Or check for comfort. See how the GMC "Six-Footer" Cab has new Ventipane-controlled ventilation, non-glare instrument panel and easy-turn steering with recirculating ball-bearing action.

One Package—"No Extras"

Yet all this GMC extra value is included in one thrifty price! Feature for feature, no truck in its class has been so completely engineered to meet the challenge of the times.

To prove it, go to your GMC dealer's showroom. Select from the wide variety of models in 9 smart new colors. Compare the unsurpassed horsepower — the tough GMC frame — *the lifetime engineering in every detail.* You'll find one fact stands out above all else:

In price, in product—in operating economy—*there's never been a better buy in light hauling!*

GMC Truck & Coach Division of General Motors

GMC

GASOLINE & DIESEL TRUCKS

½ TO 20 TONS

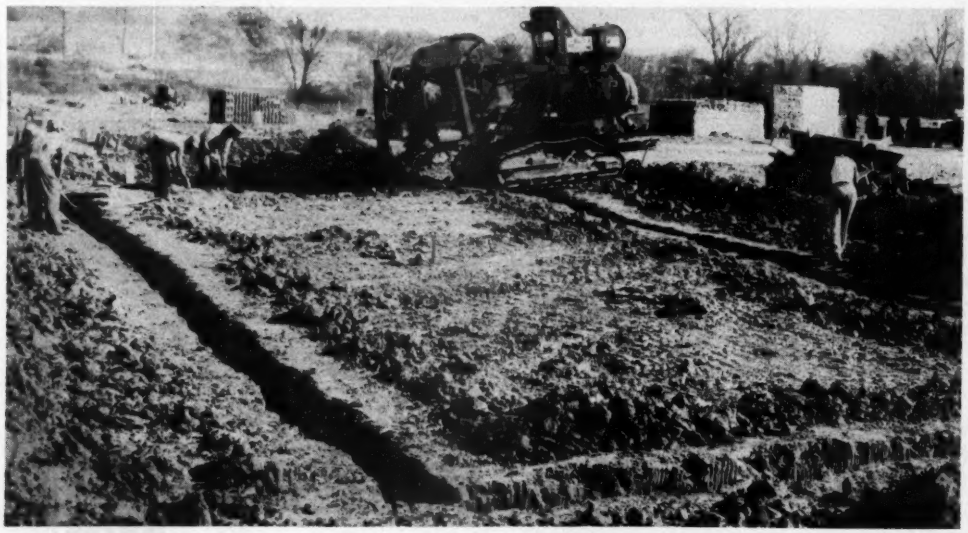
Your key to greater hauling profits

GM GENERAL MOTORS

Construction News in Pictures . . .

HERO'S RETURN—War surplus construction equipment returns home from Philippines and is unloaded at Portland, Ore., for reconditioning and resale. This is first of five complete shiploads of machines, $750,000 worth, that Portland's Schnitzer Steel Products Co. has purchased in Pacific. Included are 90 shovels and cranes, tractors, compressors and generators, and 500 tons of parts. Schnitzer also bought and is returning all equipment and supplies from Marine and Engineer Depots on Guam.

BRIDGE'S ERECTOR—Unusual derrick barge erects center span of 1,860-ft arch bridge over Mississippi at Hastings, Minn., replacing famous spiral bridge. John F. Beasley Construction Co., Muskogee, Okla., assembled hull of 10x20-ft pontoons, and on it mounted derrick with one rear leg and four side guys. Sea Mule tug moves rig into working position, where three steelpile spuds anchor it. Derrick is powered by American Iron Workers' Special 4-drum hoist with torque-converter drive.

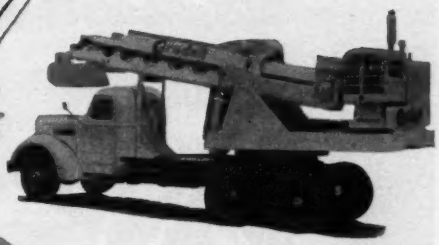


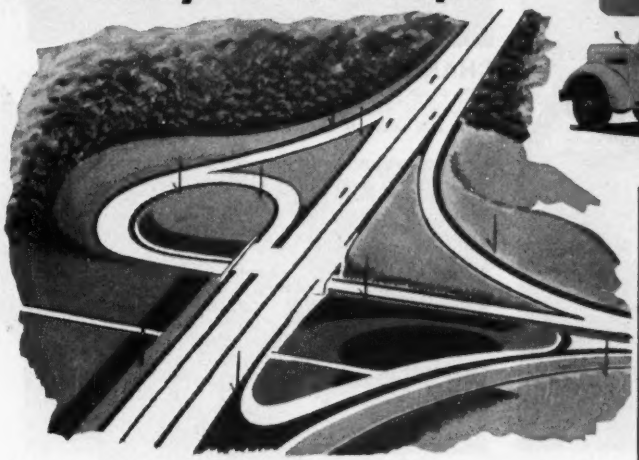
FORMS' ELIMINATOR—Vertical-boom ditcher digs foundation trench to width, line and grade so concrete can be poured directly into slot without forms. Plank across trench, for inside crawler, lets rig make square corners. In 30 to 45 min, Barber-Greene machine cuts complete 16-in. trench 30 to 78 in. deep for buildings up to 27x87 ft on this St. Louis project. R.&M. Construction Co. is digging all foundations for 211 four-family basementless apartments in this quick and economical manner.

(Continued on page 44)

17 GRADALLS

help build new extensions to Pennsylvania Turnpike





The Pennsylvania Turnpike is known today as the greatest all-weather, non-stop superhighway in the nation. When both the western and eastern extensions are completed, Pennsylvania will have a 327-mile limited access highway extending completely across the state and linking the entire Eastern Seaboard with the Midwest.

THESE WELL-KNOWN CONTRACTORS ARE USING GRADALLS ON BOTH EXTENSIONS

- H. J. Williams Company (2 Machines) York, Pennsylvania
- Latrobe Construction Company (3 Machines) Latrobe, Pennsylvania
- Ralph Myers Contracting Company Pittsburgh, Pennsylvania
- Ruth Construction Company Scottdale, Pennsylvania
- Frank Patterson Construction Company Pittsburgh, Pennsylvania
- L. G. DeFelice and Son, Incorporated Rochester, Pennsylvania
- Frank Mashuda Company Pottersville, Pennsylvania
- James D. Morrisey Company Philadelphia, Pennsylvania
- James J. Skelly Construction Company Philadelphia, Pennsylvania
- C. J. Langenfelder and Son Baltimore, Maryland
- E. P. McHugh Construction Co. (2 Machines) Penndel, Pennsylvania
- C. W. Good Construction Company Reading, Pennsylvania
- S. J. Groves and Sons Company New Milford, Pennsylvania

THERE'S little wonder that so many Gradalls were used on this famous highway project. The Multi-Purpose Gradall Construction Machine handles more types of construction work —more simply—than any similar machine on the market!

The contractors who used the Gradall knew that whether it's trenching, excavating, ditch digging, grading, or pavement removal, the Gradall handles the job simply and speedily, virtually eliminating hand labor.

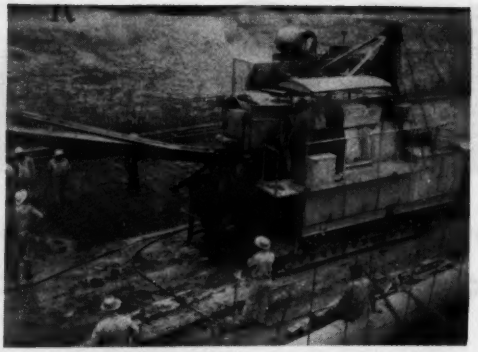
Ask for a demonstration to see how the Gradall can improve *your* operation. You can arrange this with your Gradall Distributor.

Gradall Distributors in over 60 principal cities in the United States and Canada

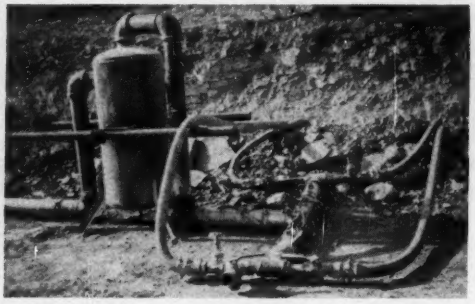
Gradall®
DIVISION OF WARNER & SWASEY Cleveland

GRADALL—THE MULTI-PURPOSE CONSTRUCTION MACHINE

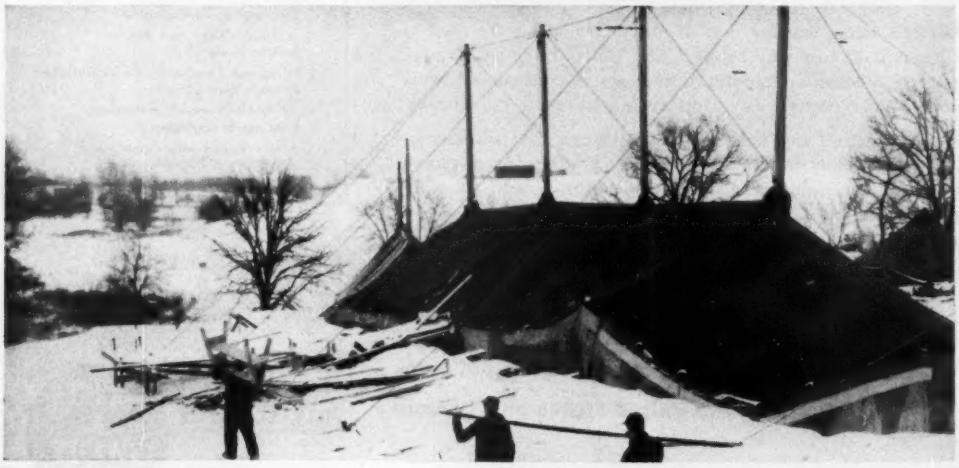
CLIFF ACCESS — Precipitous slope along Columbia River at rail relocations for McNary Dam (see "Construction Methods and Equipment," Oct. '50, p 46) makes access difficult for drillers and high-scalers. So Morrison-Knudsen Co. built 150-ft ladder for men and cable-powered sliding shelf to take equipment and powder to ledge. River is 200 ft below bench. — Em Kayan Photo



CHANNEL PAVER — P. & J. Artukovitch fitted their Foote paver with hand-dumped 1-yd Gar-Bro bucket to pour floor and walls of flood channel for Compton Creek in Los Angeles. Bucket bail adjusts to boom angle; rim adds 9 cu ft to capacity.



WATER TRAP — List & Clark Construction Co., Kansas City, rigged up this simple device to keep condensation out of their air lines on big rock cut for Burlington Railroad's Centennial Cutoff in Missouri. Pipeline from compressor enters tank from left, continues down inside with outlet near bottom. Moisture-free air is drawn off from top of tank to air-line manifold.



BIG TOP — Winter construction at temperatures as low as 24 deg below zero is no circus when work must be performed in open. So Hagstrom Construction Co., St. Paul, puts job under the big top. This 50x140-ft tent encloses one of 68 two-story apartments they are building for $3,200,000 St. Paul housing project. Canvas is hoisted higher as walls are built up. — Wide World Photo

(Continued on page 46)

HERE ARE THE Tie-Rods YOU NEED

Whenever you need tie-rods for construction, you can count on Bethlehem meeting your requirements. For Bethlehem turns out tie-rods in a wide variety of styles and sizes, and in two types.

We make tie-rods with rolled threads in thread diameters up to 1½ in. We also furnish rods with cut threads, either plain or upset, in thread diameters up to 4½ in. All Bethlehem Tie-Rods are supplied in lengths to meet individual requirements. They come straight or bent, in single or multiple units, either asphaltum-dipped or hot-dip galvanized.

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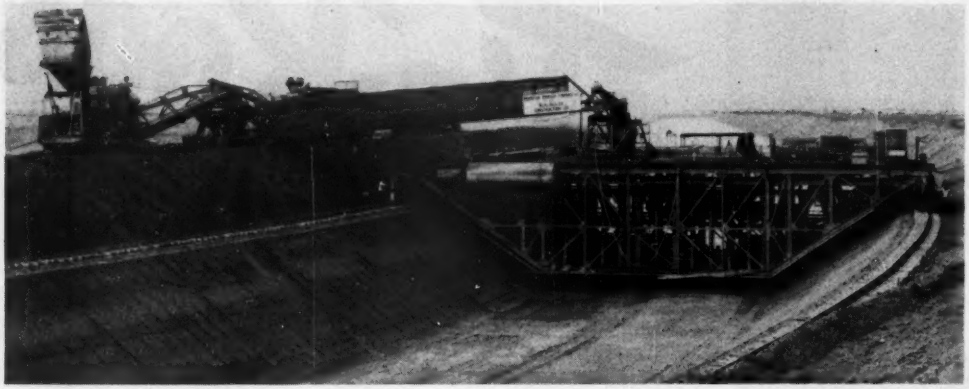
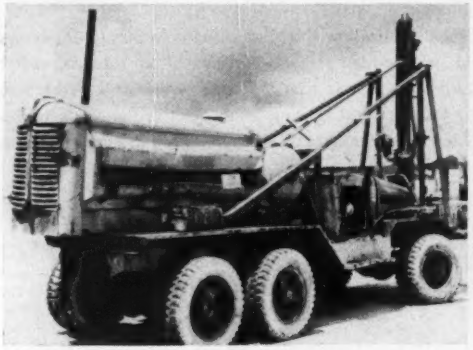
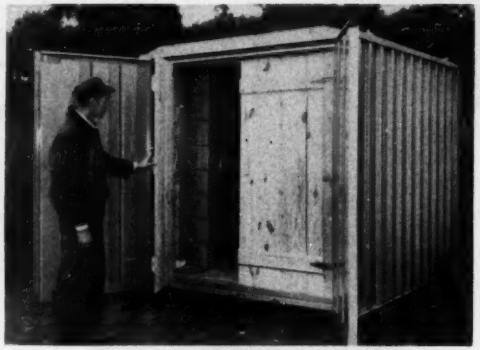
Bethlehem supplies every type of Fastener



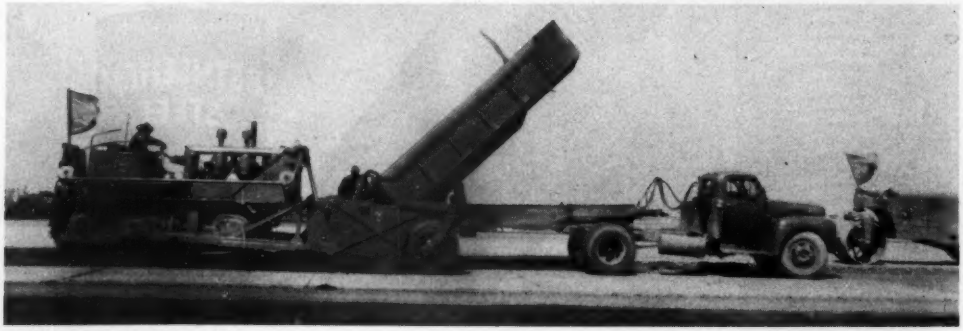
NEARLY COMPLETED—Gargantuan slip-form lining machine rounds last curve on 115-mi Delta-Mendota Canal for Bureau of Reclamation's Central Valley (Calif.) Project. Water will flow here this summer. Morrison-Knudsen & M. H. Hasler, contractors for this 8-mi section near Ora Loma, have rigged belt conveyors on booms of two pavers that mix 4-in. lining for 16-ft ditch with 48- and 100-ft bottom and top widths. Leading paver tows hopper at end of belt conveyor taking concrete to lining machine.—USBR Photo



CHEAPLY DRIVEN—Rig assembled from salvage to drive fence posts has saved Navy $67,500 in 1 year on Guam. It drives 3-in. pipe posts 3 ft into solid coral in 3 min, reducing chain-link fence erection cost by $1.50 per lin ft. Machine consists of 210-cfm Worthington compressor and Ingersoll-Rand wagon drill on truck. New, longer pipe uprights let drill handle 12-ft posts and drive to within 4 ft of ground; turnbuckle adjusts for batter. Machine has driven up to 150 posts in 8 hr, and is useful on other light driving jobs. Chief Machinist T. M. Skates fathered this baby.—U. S. Navy Photo



SAFELY STORED—Hunkin-Conkey Construction Co.'s dynamite is safely field-stored in welded steel Dravo Transportainer lined with 1-in. wood sheathing. Weathertight and skid-mounted, 275-cu ft box lets Cleveland contractor buy powder cheaper in quantity.



SMOOTHLY SPREAD— Spreader box fixed to dozer arms on HD-19 tractor lays 4-in. layers of base on Morrison-Knudsen's San Francisco Airport paving project. Swiveled wheels support front of 4x4x12-ft box for easy turning; cables from power control unit adjust depth of spread at rear. Rig leaves smooth strip of base with no side spillage—From George F. Burnley, Oakland.

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Only UPSON-WALTON offers all three

1. WIRE ROPE
2. FITTINGS
3. TACKLE BLOCKS

You get full take-up on this turnbuckle!

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After forging, bodies and fittings are straightened to insure a true thread.

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Always compare CPY

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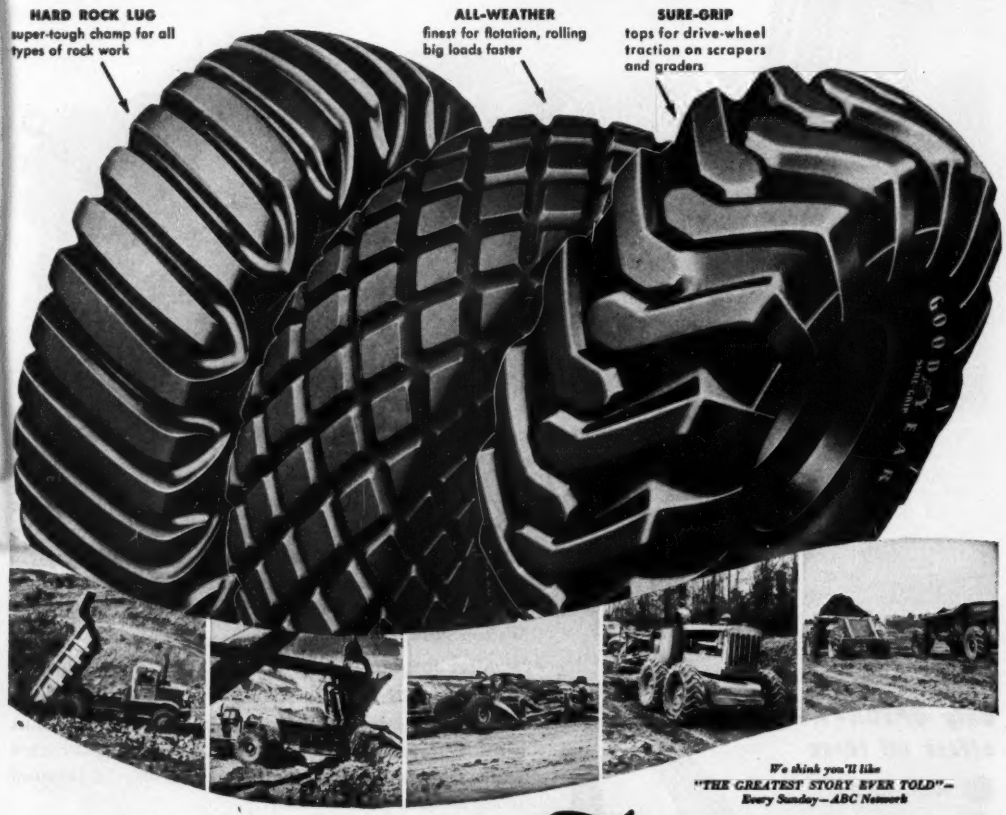
and you'll always BUY and SPECIFY Goodyear!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Volume 33
Number 3

CONSTRUCTION
METHODS AND EQUIPMENT

MARCH
1951

Harold W. Richardson, Editor

Construction's Role in Civil Defense

THE PLACE of the construction industry in building for defense and in war operation has been well established. Now the industry faces a new duty, that of participating in civil defense, for which no experience or precedent exists. Here we must start from scratch.

Contractors, because of their equipment, skill, manpower and know-how, are able and willing to take a leading part in civil defense. The fact that they are organized into local, state and national groups makes them all the more valuable in case of emergency. Other elements of the construction industry, too, are indispensable. Construction engineers and maintenance forces of public agencies, utilities and large industrial plants must be utilized. Organized construction labor also can serve. The New York Building Trades Council has set the pace for labor by making available 20,000 skilled workers for rescue, salvage and emergency repair operation.

But all these elements of construction must be organized and coordinated if their vast potential strength is to be completely utilized by the nation in its hour of need. How this can be done is outlined in an excellent report on civil defense recently released by the Associated General Contractors of America. This association with 112 chapters and 6,000 members scattered throughout the country is doing a great national service by promoting contractor participation in civil defense planning. Because the general contractor is a normal coordinator in organizing forces for construction operations, the AGC heartily recommends that its chapters, as well as other contractor groups, appoint an outstanding general contractor as the construction industry's head on state and local civil defense boards.

The job of organizing must, of course, be thoroughly and well done in advance. There will be no time to organize in the chaos of disaster.

Contractors participating in the planning should insist that one of their most capable members be designated as general supervisor of construction forces to be used. Direction of these forces must not be left to a chairman of the local defense board, to a state or municipal official, or to anyone not experienced in handling construction men and equipment.

Provision must be made for identification of construction personnel and machines and for their passage through police and fire lines. Plans as to just how construction forces will be utilized will have to be worked out in advance. With the possibility that units within a devastated area will be incapacitated, planning should be done on an area basis large enough to insure adequate forces available from other communities. There are, of course, scores of problems to be sorted out, considered and planned in advance. Where to dispose of debris; temporary relaxation of bans on heavy traffic and equipment on parkways; provision for replacement of crews and for servicing equipment must be arranged for. These are just some of the many items to be considered.

Planning for civil defense is a tough job foreign to our experience. Yet, it must be done properly and thoroughly at that.

Construction can offer much to the right kind of planning. So much, in fact, that the country simply cannot afford to ignore or misuse the industry's potential strength to cope with disaster.

Rich

SPIKE SEZ: You fellows on this board don't want to overlook the big job contractors can do on civil defense. We've got the men, machines, and savvy that will be a big help in time of disaster and they're all at your disposal. Let's work together!

USBR Photo

Concreting proceeds around the clock, 7 days a week, as . . .

Hungry Horse Dam Tops Million Yards in Short Season

By HAROLD W. RICHARDSON, Editor

MONTANA'S RUGGED WINTER didn't relax its icy tentacles at Hungry Horse Dam last year until April 9, and then closed in again with snowy fury in mid-November. Yet, despite the short season and despite a slow start because of abutment excavation cleanup and crowded conditions in the canyon bottom, concrete crews managed to pour more than a million yards into the big structure last year. With 60,000 cu yd placed at the tail end of the 1949 season, the dam now contains 1,100,000 cu yd, more than a third of the ultimate 2,900,000 cu yd that will be required.

Even greater progress is planned for 1951, for contractors and U. S. Bureau of Reclamation engineers on the project hope to add 1,200,000 yd to the dam this year, leaving only 600,000 yd for the topping-out 1952 season. A faster pace is possible this coming season, for the dam now rises 234 ft high (ultimate 564 ft) out of the narrow gorge to where the abutments widen out, giving more room for more pours. Besides, the concrete is rising above the maze of encased penstocks, outlets, valves and other control and powerhouse appurtenances.

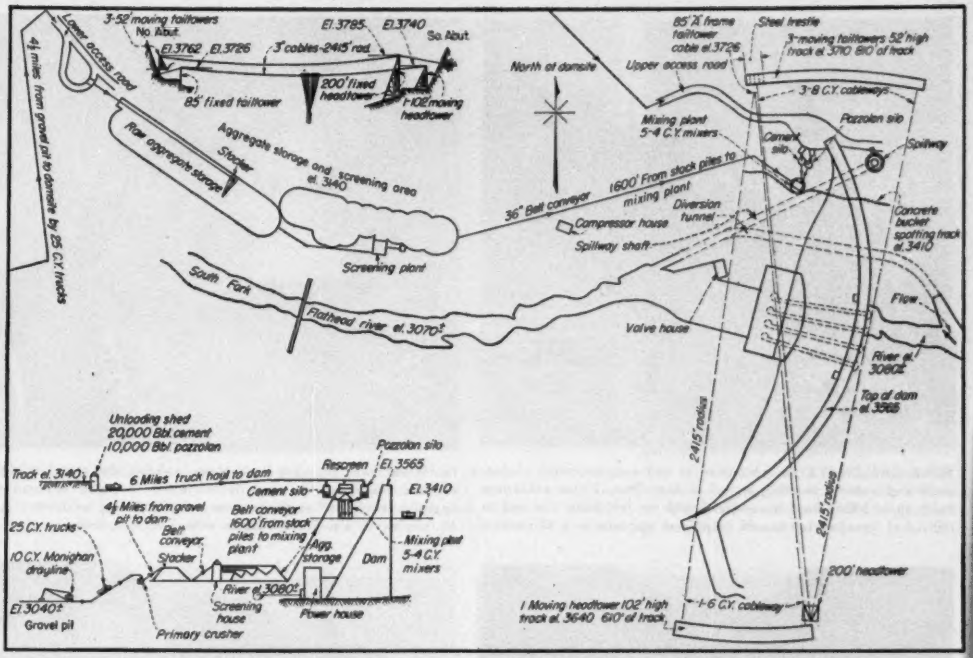
The record 24-hr daily pour for the 1950 season was 6,618 cu yd—on Labor Day at that. By the end of June the crews were turning out more than 6,000 yd every day.

Because of the importance of power in the defense program, consideration was given to winterizing concreting operations in hopes of getting the four 105,000-hp generating units on the line a year ahead of the 1953 original schedule. But excessive cost and almost impossible construction requirements for cold-weather operation ruled out the year-round proposal.

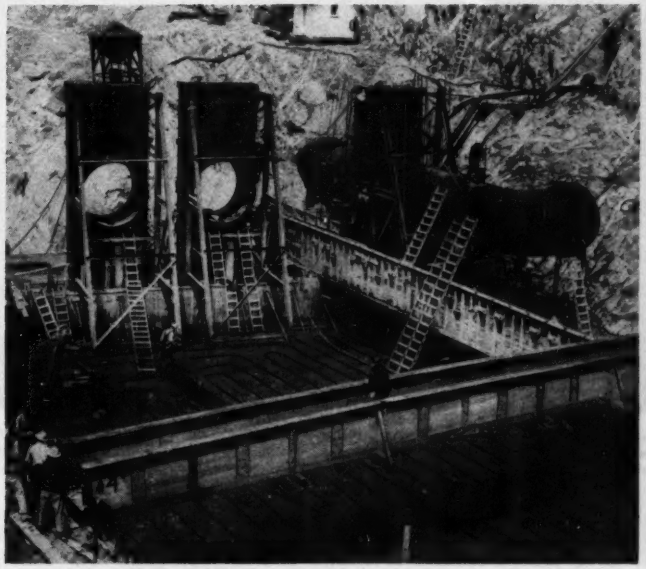
Hungry Horse Dam is being built for the U. S. Bureau of Reclamation by a combination of contractors known as General-Shea-Morrison. A combined flood control, power and irrigation project, it is located on the South Fork of the Flathead River in northwestern Montana not far from Glacier National Park. The structure is an arched gravity type 564 ft high, with a crest length of 2,115 ft on a 1,200-ft radius. It will require 2,900,000 cu yd of concrete.

Construction operations are following closely those outlined in CONSTRUCTION METHODS AND EQUIPMENT, December 1949, page 50. Aggregate production was described in February 1950, page 56; sinking of the glory hole spillway shaft was covered in November 1949, page 48.

The construction plant layout is shown in the accompanying drawing. Sand and gravel are obtained from a river bank pit at the junction of North and South Forks of the Flathead 4½ mi below the dam, where they are dug and loaded by a 10-yd Monighan walking



CONTRACTORS LAYOUT at big dam reveals well-planned plant distribution, aggregate supply and processing, and cement-pozzolan supply. Four 2,415-ft cableways, three of them operating from one fixed head tower, are heart of concrete placing system.

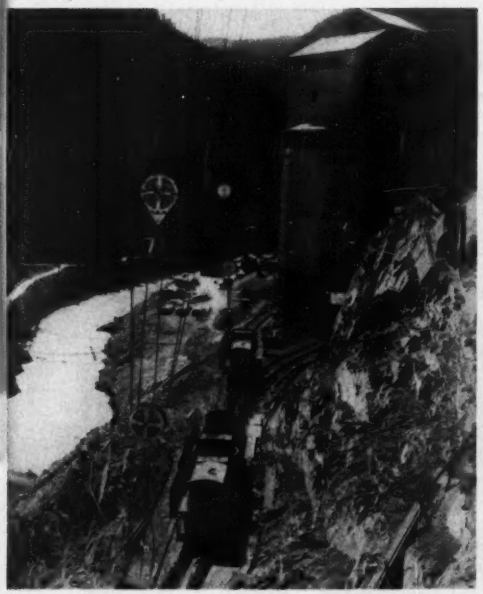


ENCASING COMPLICATED piping and valving slowed up concrete placing during early part of last season. One of job's safety features is plywood girder pedestrian bridge spanning low blocks. There are several of these timesavers on job, all of which can be easily moved by cableway. Forms are full-cantilever steel units for pouring 5-ft lifts. They are lifted by chain blocks on guyed A-frames as shown at left. Note tubing, on top of low block, installed for cooling concrete with water diverted from creek high above the abutment.—USBR Photo

RISERS FOR AIR AND WATER outlets for sandblasting and cleaning tops of blocks are extended up through concrete from pour to pour, ending in manifold. This arrangement keeps hose lines and air and water pipelines out of way of form setting and handling.

FOUR CABLEWAYS, each traveling at one end, are heart of concrete and material handling system at dam. Three 20-ton cableways head up in 200-ft fixed tower (left) high on left bank, and end in individual traveling tail towers (right) on opposite side of canyon.

Fourth cableway traveling head tower is shown above and to right of fixed tower in left view. Its tail tower is guyed A-frame on opposite canyon wall at downstream end of traveling tail-tower track. All cableways are 2,415-ft span with 3-in. gut lines.

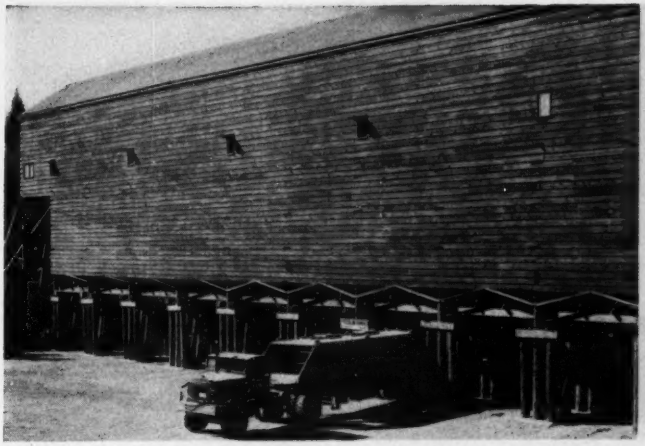


FROM TOWERING MIXING PLANT high on right canyon wall, concrete is shuttled by double 8-yd self-propelled hopper cars to cableway and thence to forms in 8-yd two-line dump buckets designed by late Frank Crowe. USBR specs permit dumping all 8 yd in one spot, which speeds up concrete handling. Buckets are dumped by cableway operator.—USBR Photos

dragline into 25-yd Euclid trucks for haul to the job processing plant, rated at 700 tons per hr. Here the aggregates are screened into four sizes of gravel and three sizes (later blended) of sand, the latter being supplemented by fines manufactured by the wet process. The necessity of manufacturing sand last season was reduced considerably by the discovery of an easily worked deposit of natural sand near the contractor's shop area.

From storage at the processing plant the aggregates go by steep belt to the mixing plant high on the right canyon wall. Cement and pozzolan (fly ash from a Chicago steam generating plant) come by bulk in railroad hopper cars to a siding at Coram, 6 mi from the dam. Pozzolan is used in the mix in proportions of one to two of cement. These bulk materials are hauled to silo storage at the mixing plant in Euclid trailers equipped with special Olson 200-bbl tight bodies.

In the 6-mi haul to the mixing plant, the cement and pozzolan



CEMENT AND POZZOLAN supply starts from this big 30,000-bbl unloading and storage plant at rail siding 6 mi from dam. Railroad cars loaded with bulk materials run inside shed and dump into hoppers over truck bays. Special Euclid trailers fitted with 200-bbl tight bottom-dump bodies haul cement and pozzolan to silo storage at mixing plant.

TOP OF EACH BLOCK IS thoroughly cleaned by sandblasting and application of high-pressure air and water jet prior to beginning of next pour.

DRAINS FOR DISPOSAL of wash water and loosened laitance are carried up through each block, formed by scupper-topped pipe shown here. Drain hole has been temporarily blocked with concrete plug until pipe form can be set for next pour.

PORTABLE TOOL BOX, divided into numerous bins, carries cooling pipe fittings and other small items needed at every block. It is handled by cableway.

SAND STORAGE BIN and sand-blast rig are mounted on portable frame that can be moved from block to block by cableway as required.

trucks must travel over U. S. Highway 2 and make a left turn off that busy road. A traffic light at the intersection is actuated by remote-control electronic device by the truck driver. Except when trucks are making a left turn, the light remains green for through traffic on the highway.

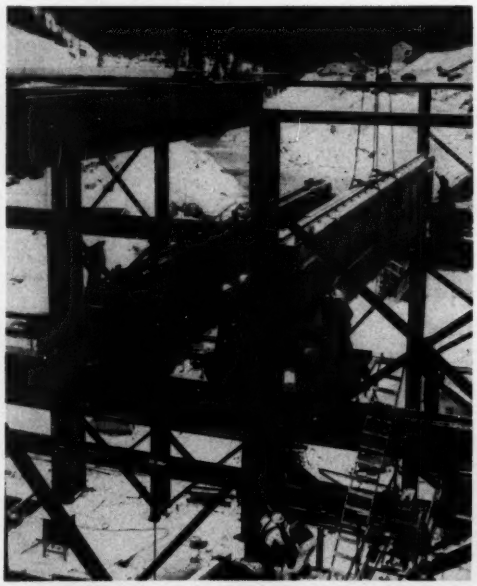
The mixing plant contains Johnson automatic batching equipment and five 4-yd Koehring mixers. Concrete is shuttled from the plant in double 8-yd hopper cars to within reach of one of four cableways.

Three of the cableways are 20 tons cap each, capable of handling 8-yd concrete buckets. These head up in a single fixed head tower 200 ft high, on the left bank, and each ends in a traveling tail tower, all three on the same track, on the opposite side of the canyon. The fourth cableway, downstream from the others to cover the powerhouse section, is 15 tons cap, and can handle 6-yd buckets. It operates from a traveling head tower on the left bank and a fixed tail tower on the opposite side. All four cable-

BIG PENSTOCK SECTION takes a ride up steep access road on left bank. Bulldozer trails truck up road to act as backstop in case truck starts rolling backwards.

PORTABLE FIELD OFFICE for contractor forces is cribbed up on sloping left abutment. Designed for cableway hoisting, and fitted with slings, it can be moved around job out of way.

BIG FORM SECTION braced with spiders starts down 55-deg slope into glory hole spillway shaft preparatory to placing concrete lining. This is one of many odd jobs that must be carried along with pouring of main dam concrete.—USBR Photo

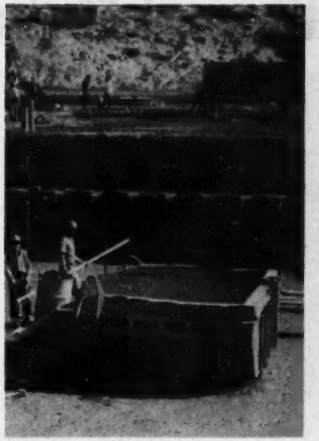


SOME OPERATIONS, such as setting powerhouse steel and cranes, are being carried out all through current winter season despite bitter cold weather. Completion of powerhouse will be under separate contract.—USBR Photo

ways are 2,415-ft span, and were mainly salvaged from the Shasta Dam plant except for one new Washington 3-drum electric hoist.

All concrete buckets, except grout buckets, are the Crowe two-line type that are dumped by the cableway operator in the same manner that a clamshell bucket is opened and closed by two lines. Because of this feature, and because the cableway system was planned and bought in the immediate post-war period of scarce equipment with no chance for extensive re-design and changes, it is not possible to travel and to hoist or lower the bucket at the same time. Thus, it is necessary to run the bucket out over the forms, then lower, dump, raise and run it back in separate operations, all of which takes time. All cableway movements are controlled by an operator on each rig receiving telephone signals from signalmen at the forms and at an observation post near the mixing plant.

Concrete is poured in 5-ft lifts within Blaw-Knox full cantilever



OLD STEEL TRUCK BODY carries pipe and other heavy items right to each block. Skip is handled by cableway.

PERMANENT DRAIN PIPE is supported on welded pipe bents awaiting encasement in next pour. Reinforcing cage around pipe is also welded in place. As the dam rises higher and higher, there is less of this type of work to do.

DAM RISES out of narrow gorge bottom as first of winter snows sounds warning that end of concreting season is near. Schedule for coming season is 1,200,000 yd of concrete. This goal probably will be met because the dam is now spreading out, allowing more room for pours in more places. Also, structure is rising out of abutment excavation troubles and above numerous penstocks, conduits and valves found in lower portion. The weather, of course, will really dictate progress by determining length of season.

steel forms. Meticulous care is taken to prepare the top of each lift for the next pour through sand blasting and water jet cleaning.

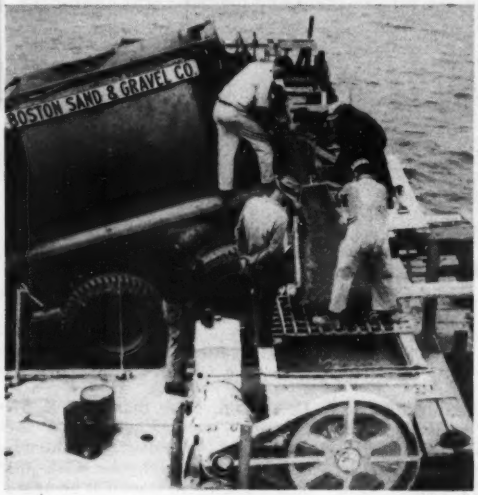
The various concreting operations are covered in the accompanying pictures and their captions. Some of the many interesting ideas found all over the job are also shown. This story is really told by these illustrations.

For the Bureau of Reclamation Clyde B. Spencer is construction engineer in charge, assisted by Dave Culver. C. W. (Smoky) Wood is project manager for General-Shea-Morrison. Other key contractor personnel include: Richard Jones, chief engineer; Mel Hord, administrative assistant; Dave Henderson, office manager; E. W. Simpson, superintendent of the dam; and C. T. Moyer, superintendent of the powerhouse. G-S-M's dam building contract was awarded in 1948 for $43,431,000.

Chicago Bridge & Iron Co. is installing the penstocks. Bids for completion of the powerhouse were opened March 1.

Unusual Concreting Operations and Floated

TIMBER TRESTLE 600 ft long accommodated transit-mix trucks for direct pours of tremie seals and distribution blocks in first three water piers; also handled truckloads of sheetpiling, granite and miscellaneous materials on viaduct running out to Long Island in Boston Harbor. Bulldozers filled in 175-ft approach across tide line with material from nearby abutment.



FROM TRESTLE END veteran Rex Pumpcrete rig, fed by transit-mixers, pushed concrete out over 750 ft of smaller trestle to pour three more piers in rapid succession. From there Merritt-Chapman & Scott's floating mix plant Convoy poured next five incasing 200 timber piles in each for consolidation of gravel bottom.

Paver aboard mixer barge, Pumpcrete rig pour 15 piers

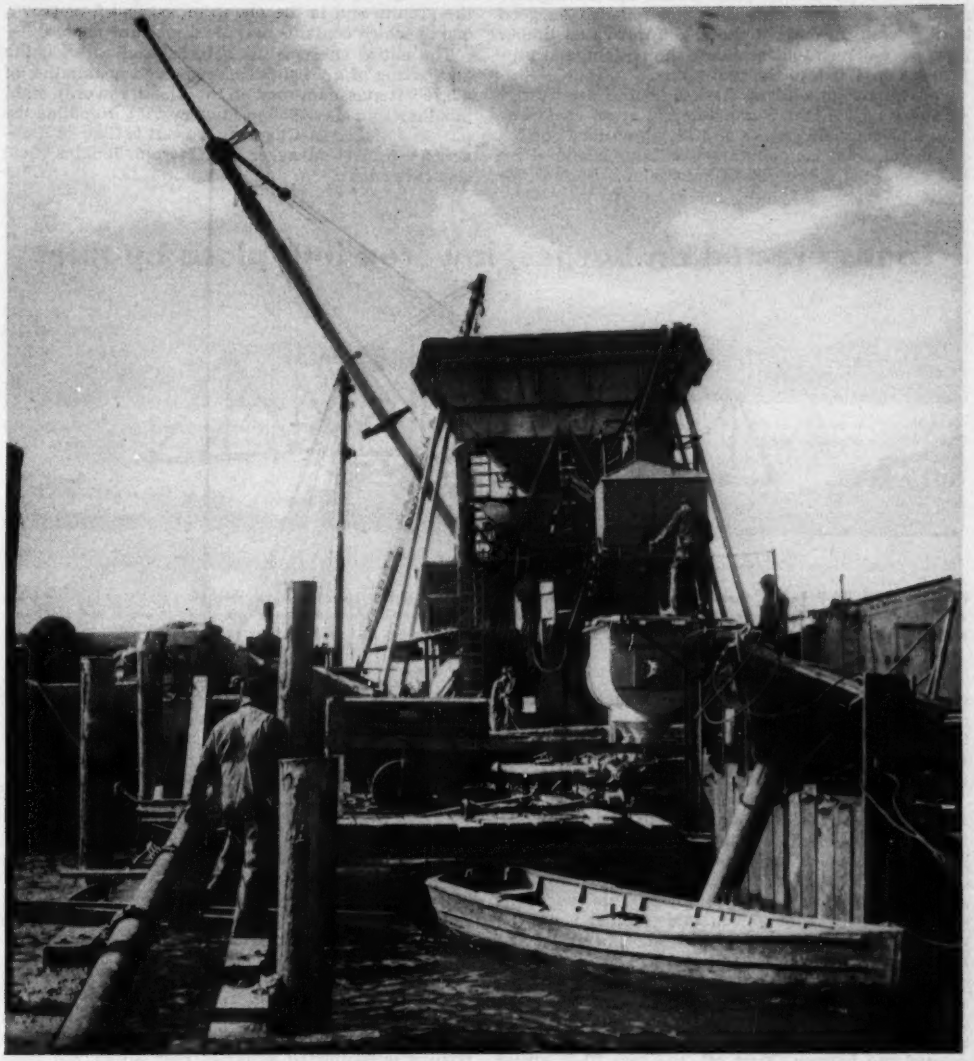
By JAMES M. CONNOLLY
Associate Editor

DOUBLE-DRUM PAVERS usually stick quite close to highway slabs, but one wandered away in Boston recently and ended up on a barge pouring tremie seals and distribution blocks on deep-water piers. Merritt-Chapman & Scott Corp. set up a MultiFoote 34-E rig on their mixer boat Convoy and equipped it with a 50-ft trolley boom to reach the farther end of the cofferdams. This rig, along with a Pumpcrete setup, was the key to an unusual concreting operation which made short work of the 15 piers and two abutments on the viaduct to Long Island in Boston Harbor.

And as if that wasn't enough cleverness for one job, Bethlehem Steel Co., subcontractors for steel superstructure, decided to erect the spans on barges, float them into final position and let tides do the work of lowering them into place. Just as easy as that!

After pouring the west abutment on the land side and the first land-based pier, MC&S ran a heavy timber trestle out to pier No. 4 with 175 ft of gravel fill for

Steel Spans on Boston's Long Island Viaduct



EQUIPPED WITH DOUBLE DRUM PAVER and 50-ft trolley boom, floating plant anchored at Pier No 13 and fed relocated Pumpcrete rig, pouring remaining three piers and east abutment on island. Tugs transferred quartets of attendant barges, which fed sand and gravel to 1½-yd clamshell bucket, cement and water through suction lines to paver bin.—"New England Construction" Photo

an approach on the shore line. Where hard penetration was encountered in shallow water, steel piles were driven for support, but timber piles were driven in depths of 100 ft or more. Timber caps spanned the piles and supported steel and timber longitudinal stringers, topped with 4-in. decking. The 600-ft trestle accommodated a Link-Belt truck crane, truckloads of sheetpiling and granite, and transit mixers which poured Piers 2, 3, and 4.

At this point MC&S's veteran Model 200 Rex Pumpcrete machine was set up on the end of the trestle and, fed by transit mixers, pumped seals and successive pours on Piers 5, 6, and 7—a maximum horizontal push of 750 ft.

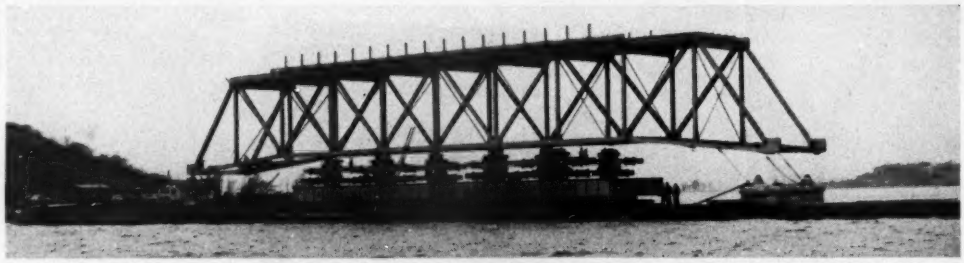
Next on the scene was the mixer barge Convoy, equipped with the double drum paver, 1½-yd clamshell, and a three-section Butler bin; and flanked by sand, gravel, cement and water barges. Concrete was

payed out along the 50-ft trolley boom at the rate of 60 cu yd per hr and the 800-cu yd tremie seal pours, 22x62 ft and 16 ft high, were poured in 13 to 14 hr. Piers 8 through 12 were poured from the floating mix plant and were the only ones not founded on good hard gravel. In each of these, 200 untreated timber piles were driven to consolidate the bottom, and projected 2 to 4 ft into the seal pours.

Fed by the mix plant (lashed to the deep-water side of Pier 13), the Pumpcrete rig again came into play and poured Piers 13 and 14, up on land for No. 15 and on to the east abutment on Long Island. Here the push was easy—390 ft maximum. Besides the Convoy and her host of attendant barges the construction fleet included the Cincinnati, driving and pulling sheeting and setting frames; the Warren, setting granite facing; the Boullion, pouring high concrete behind the granite and in the piers proper; and four scows, one of which contains parts and machine shop.

The entire substructure job, as well as widening and paving of a 7,400-ft causeway and installation of a 5,700-ft macadam road on the island, ran only eight months, from May 1950 to January 1951. Handling the project for Merritt-Chapman & Scott is Charlie Richardson, project manager and Harold Jenkins, field superintendent.

Spans erected on barges, lowered into place by tides



FIRST OF TEN 250-ft floated deck truss spans is gently moved in at high tide alongside timber trestle with all stringers, wind braces and as much railing as possible installed. Members from two end-spliced girder spans crib up steel for clearance above piers. Delicate adjustments are made with series of cables and block-and-tackle setups tied back to shoes on pier tops.

NOT TO BE OUTDONE by the unusual concreting operations which preceded them on the substructure, Bethlehem Steel Co. forces came up with a slick plan for floating in most of the steelwork on Boston's Long Island Viaduct.

Here's what the job called for: erection of a 60-ft girder span from the land abutment to land-based pier No. 1; twelve 250-ft deck trusses; one 250-ft through truss to provide channel clearance of 51 ft between deep-water Piers No. 10 and No. 11; and two 70-ft girder spans to the farther abutment. Tide conditions permitted floating of eleven mid-channel runs, the remaining deck trusses and girder spans being erected by standard traveler and falsework procedure.

Across the harbor two 30x110-ft barges were lashed side by side and tied up to a railroad dock. A 60-ton oil-fired locomotive crane with blocked outriggers, 90-ft boom and 20-ft trussed jib, unloaded steel and erected the trusses. First off, the two 70-ft girder spans were end-spliced along the barges with stringers forming eight sets of cribbing along with 180 12x12-in. timbers, 6 ft long. Atop each crib was a jack for minor vertical adjustment, if needed; a 60-ton hydraulic jack under the third panel point from each end, and a 200-ton wedge jack under the fourth panel points. Spans were completely riveted aboard the barge including all longitudinal stringers and as much railing as possible. During erection barge draft increased from 2 ft to 5 ft.

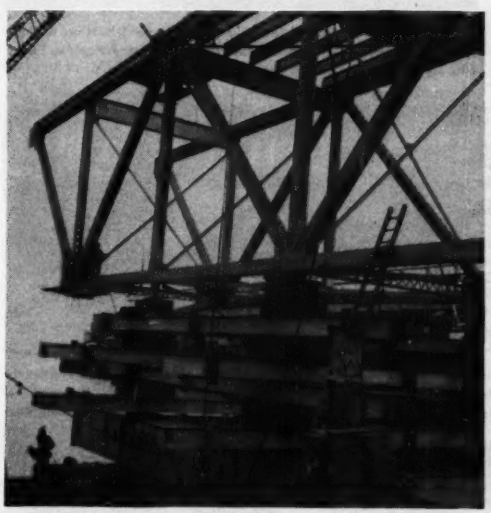
Because of shallow water, floating of the span between Piers 2 and 3 was planned first. As an added precaution, Bethlehem also tied up to the timber trestle alongside, which had not yet been removed. With only 6 in. clearance above bottom and a 2-ft-per-hr tide drop, only 15 min was allowed to remove the double-barge setup after the span was lowered to the steel shoes atop the piers.

From each No. 1 panel point a ⅞-in. cable ran diagonally to a 3-ton come-along, in turn fastened to the inner anchor bolt of each steel shoe. Double block and tackles were hooked to steel anchors fastened to outer bolts running straight out to chokers a few feet shy of the panel point. Lateral and longitudinal adjustments thus controlled and guided the 300-ton span to its proper position. At this writing three additional spans have been placed in similar manner in alternate bays across the channel.

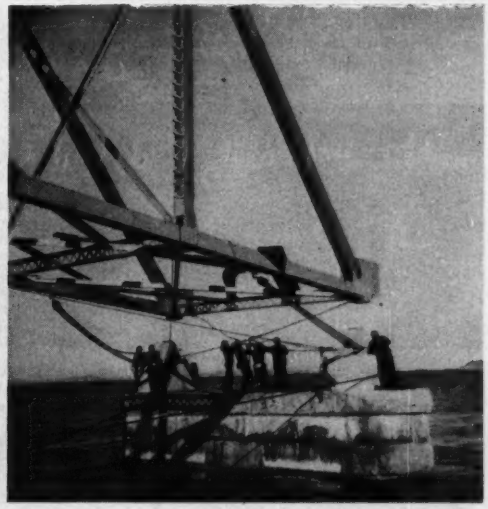
Meanwhile falsework bents were placed to allow a traveler to proceed with erection of the 60-ft girder span from the west abutment to Pier No 1 and a typical deck truss to join the first floated section. When floating is completed as far as Pier No 13, the same traveler will be erected there to proceed with the remaining 250-footer and the two 70-ft girder spans which will meanwhile continue to serve as cribbing.

When the alternate spans are floated into place, one end of each, complete with all gusset plates, will be sitting on semicircular pin seats; the opposite ends on one of two pairs of rocker seats which will allow movement from expansion and contraction. Then a floating derrick will start at the second set of rockers and cantilever out two panels, temporarily tying back to the floated-in spans. The remaining eight panels of each alternate span will be assembled in similar manner aboard the barge with the pier end high. Two gusset plates will be riveted at the end of the

RAILROAD CRANE erects and workmen completely rivet spans on twin barges tied to dock. Extra safety meetings were held to caution steelworkers in vicinity of crane boom or hook on bobbing effect of barges. When every other pier is floated in, two bays will be cantilevered out from piers by floating crane; then eight-panel sections will be floated in to complete bays.



FOR EXTRA VERTICAL ADJUSTMENT 60-ton hydraulic jacks stand on cribbing under third panel point from each end, and 200-ton wedge jacks under fourth points. Panels are 25 ft long, 28 ft high.



WITH SPAN IN FINAL POSITION, riggers make last-minute adjustments through cables, come-alongs and block-and-tackle setups; then wait for tide to gently lower 300-ton unit.

cantilevered section, with the other pair riveted to diagonal and horizontal members at the end of the floating section.

Then the eight-panel piece will be gently floated into place at high tide. As the water recedes, and gusset plate rivet holes line up on the cantilevered section, pins will be inserted to act as hinges; then the farther end will drop slowly into place on the pin-seated pier.

Final floated section will be the high through truss which will sit 50 ft above the barge deck on double frames of falsework measuring 23x25 ft. Placing of railings, verticals and connecting top chords between the floated spans will complete the steel work.

The project is being handled by Bethlehem Steel Company's Eastern Erection District under G. P. Bullard, manager of erection.

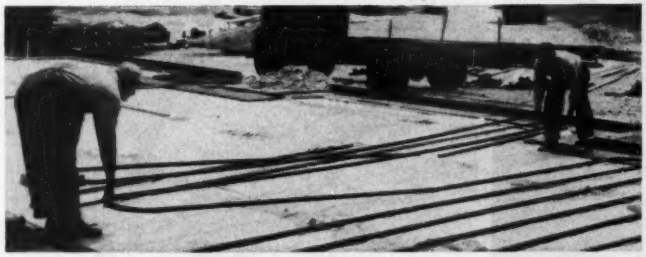
Ivy Shook is job foreman for Bethlehem Steel Co. and Don Smith, resident engineer. The 3,450-ft two-lane viaduct, designed by Crandall Engineering Co. of Boston, will provide a direct vehicular route to Boston City Hospital's buildings on the island, heretofore accessible only by ferry service. Crandall's resident engineer is Fred Cosman, and Tudor White is chief inspector. Contract was let by Boston's Institutions Department, of which J. M. McGillivray is Commissioner.

Steel Pipe and Brains Cut Heating-Job Costs

EASY-BENDING AND LESS-COSTLY STEEL PIPE, coupled with smart assembly and placing techniques, is making an economical radiant heating installation at Westover Field (Mass.) Air Base, near Springfield. Here, 100 mi of 1-in. Jal-Duct pipe are being embedded on 12- and 18-in. centers in 256 slabs of two- and four-family houses privately financed and built for 750 servicemen's families under the Wherry-Spence Act. It is probably the largest residential installation of steel-pipe radiant heating.

Commercial Welding Co., Portland, Me., is handling pipe work on subcontract from Westover Construction Corp. Their engineer Earl Reed and foreman John McCarty sparked the job by: (1) Setting up a fabricating shop in one of the houses to save cost of a shed; (2) building a portable bending machine and measuring jig that shapes pipe 180 deg to correct radius in 5 sec; (3) painting patterns on the shop floor for faster sub-assembly; (4) making a trailer to carry all field-welding supplies. Accompanying step-by-step photos show these, and pipe installation.

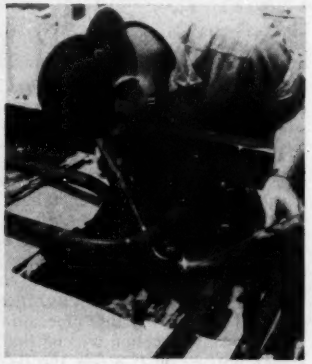
1 PIPE IS BENT in special job-built jig for radiant heating systems at Westover Field Air Base housing project. Here machine forms 1-in. steel pipe main, measuring and bending it in 1 min.



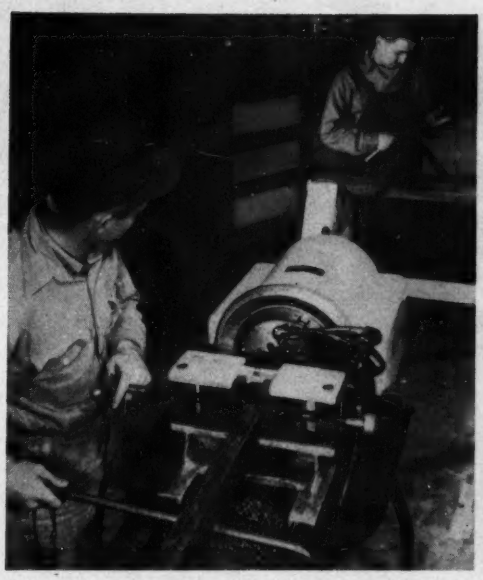
4 PANELS ARE PLACED on waterproof paper membrane over sand and gravel backfill within house foundation walls. Note Celotex board to insulate slab edges. At rear is delivery truck with transverse beams on chassis for easy handling of pipe panels.

5 COILS ARE WELDED with acetylene to join panels into complete system. Steel plate with handle protects paper membrane.

6 WELDING GAS IS SUPPLIED by trailer dolly that carries three sets of oxygen and acetylene tanks, as well as stock of welding rods stored in frame uprights. Rig, made from scrap radiant heating pipe from job, facilitates house-to-house moving.

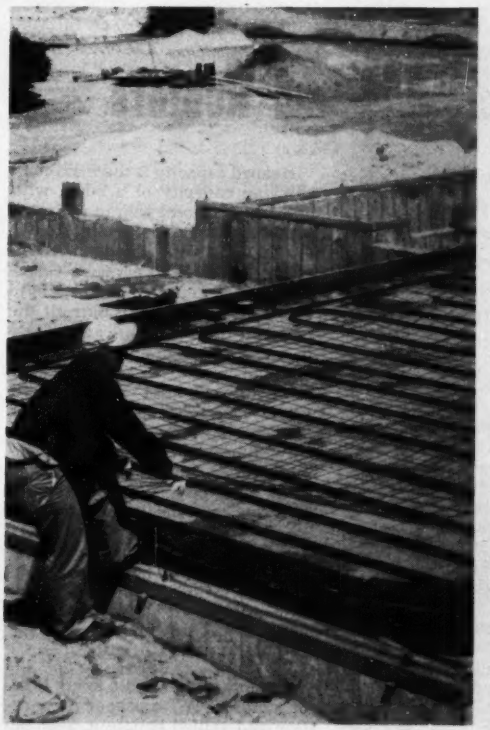


7 SYSTEM IS COMPLETED by welding to boiler headers. It will now be leak-tested for 4 hr with nitrogen under 125-lb pressure.



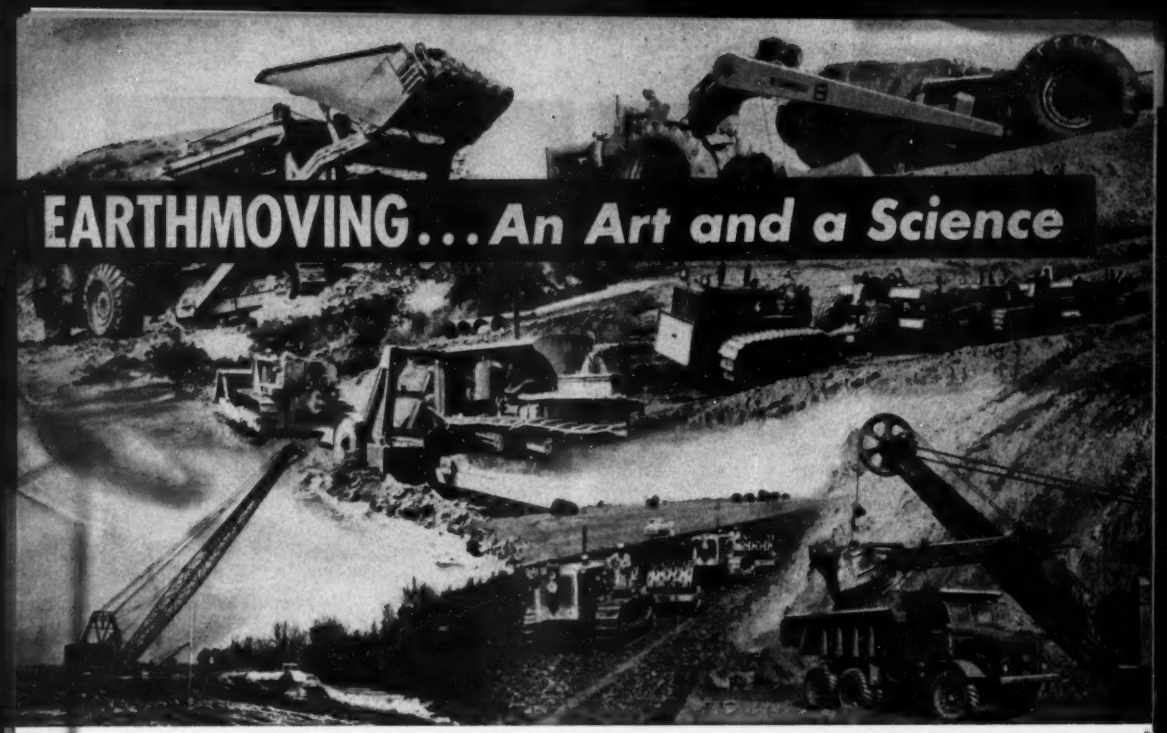
2 RUN IS CUT to length in pipe shop set up in house scheduled to be completed last. Heating systems of project's 256 houses for 750 families call for 100 mi of Jones & Laughlin Jal-Duct.

3 LENGTHS ARE LAID OUT over patterns painted on shop floor, then welded into coils before delivery to home site. Panel systems for each of four types of houses are painted different colors.



8 REINFORCING IS SPREAD over completed radiant system in preparation for embedment in 3½- to 4-in. concrete floor slab. Reinforcing fabric is 6x6-in. mesh of 10-gage wire.

9 CONCRETE IS POURED for entire slab in less than 45 min by crane-handled bucket. During pour, each pipe of heating system is usually vibrated to insure complete incasement. **END**



3. Application of Scrapers and Rooters

This is the third of a series of articles on the fundamental principles of earthmoving which will be published each month throughout most of the year. The entire field of earthmoving will be covered, including equipment selection, application and maintenance, operating costs, production factors, compaction, job engineering and other items. Various types of equipment will be discussed in turn.—THE EDITOR

BY DAN K. HEIPLE Chief Field Engineer, R. G. LeTourneau, Inc., Peoria, Ill.

Scraper Application

The scraper is capable of digging its own load, hauling the load, and then spreading the load in controlled layers. Under most conditions, excluding the simplest operation of casting, it is able to move material at a lower net cost per cu yd than any other type of earthmoving machinery available today.

The scraper is a precision tool in the earthmoving trade. It can cut a grade to 0.1 in. for finishing, and can fill to the same exacting requirements. It can cut back slopes, ditches and shoulders, clean out between concrete forms, and crown or slope a roadbed or airport. It is efficient for stockpiling materials or reclaiming them from stockpiles. Its basic efficiency is relatively unaffected by depth of cut, length of haul or type of soil. The scraper is economical at haul distances under 200 ft, and with rubber tires and high-speed prime mover it can compete with trucks on longer hauls.

Bowl size ranges from less than 4 to more than 30 cu yd. Struck capacity is basically the volume of the bowl in cu yd at water level (level full). This figure is quite often used as the cubic pay yard capacity. However, it can result in faulty estimating because of the variation in swell of materials.

Heaped capacity is the maximum carrying capacity of a bowl, with no consideration given to material, even though each type of earth has an angle or slope at which it will stand. Most manufacturers calculate heaped capacity of scrapers to be the struck capacity plus all the material the bowl can carry above it on a 1:1 slope, or a 45-deg angle of repose. In addition, some scrapers and most hauling units are given a tonnage rating.

The scraper may be powered by three types of prime movers: Two-wheeled or four-wheeled rubber-tired units or track-type tractors.

To cover the application of scrapers properly, it is necessary to break down the job into its specific operations. The logical breakdown is in load, haul, and spread elements.

Loading or Digging

Scrapers will handle many types of material. With proper preparation and skilled handling, they can load anything from rock to mud and sand. There are a number of procedures for maximum loads.

A. *Pusher Loading:* Crawler tractors with scrapers may load without outside help, but generally it is more economical to use pusher assistance to obtain heaped loads in the shortest time. With few exceptions, pusher assistance is essential for self-propelled, rubber-tired scrapers.

Pusher loading should generally be accomplished in an average of 1 min in 100 ft of travel. Additional time and distance may be used to obtain extra yardage if the haul is long enough and added yardage great enough to offset hauling fewer loads because of longer loading time.

Synchronize the pusher and scraper to eliminate waiting time. Space units to enter the pit or borrow area at 1½- to 2-min intervals. This keeps the pusher tractor working efficiently and avoids unnecessary scraper delays. To determine the approximate number of scrapers one pusher can handle, divide the scraper cycle time by the pusher cycle.

The newest tractor, or the one in best mechanical condition, operated by the most skilled operator should be used for pusher loading.

B. *Downhill Loading:* In downhill loading, the force of gravity acts on the scraper to obtain larger loads in less time. If practical, it should always be used in cut excavation.

The effect of downhill loading is to add a force of 20 lb per gross ton of weight for each 1% of favorable grade. For instance, the effect of a 10% grade on 30 tons of equipment and load is 20 lb x 30 (tons) x 10 (%), or the equivalent of 6000 lb of added drawbar pull.

C. *Straddle Loading:* To straddle load, leave a ridge approximately 5 ft wide between successive loads. Straddle this ridge for additional yardage on the third trip, as the center strip loads with less resistance than a full cut. The method also assists in maintaining a level cut. For maximum efficiency, combine downhill and straddle loading.

D. *Chain or Shuttle Loading:* The pusher can serve more units or reduce waiting time if each unit coming into the pit will pull up alongside the unit being loaded so that the pusher need only shift over to continue loading. In level cuts, loading in both directions will also save pusher maneuvering time.

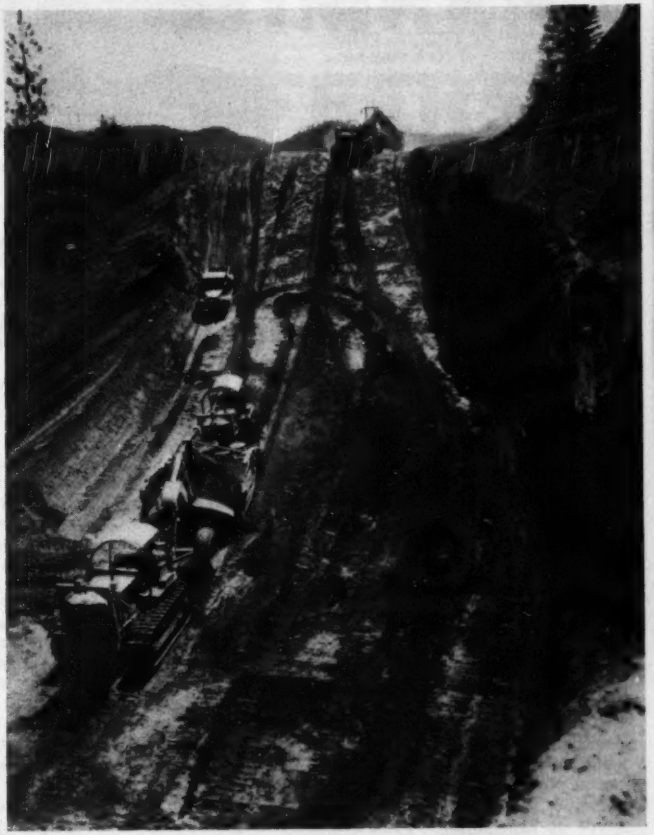
E. *Loading to Maintain Slope:* A scraper will tend to slide away and flatten a slope unless cuts are maintained low against the bank. Turn from the cut center to outside so the scraper will come against the slope. Drop the blade and start digging when the prime mover or tractor is parallel to the slope, but before the scraper has completed the turn. This creates a low spot into which the outside scraper wheels will drop, tilting the unit to the outside, and maintaining the cut low against the bank. Successive loads are stepped out, leaving a rough grade. If the grade is not too steep, the scraper can complete the job by working on a plane with the finished slope.

For final finishing, the tailgate is pulled forward approximately three-fourths of its travel distance. Then as the dirt is cut, it piles against the tailgate and drifts into the low spots which are below the grade line.

F. *Loading in Different Materials:* Loam and most clays cut easily and load well. A minimum of power, distance and time is required to get a heaped load in the scraper. The very hard clays should be loosened by rooter or scarifier before loading, and other materials may require special techniques.

1. LOADING SAND: Sand, with little cohesion between its particles, has a tendency to run ahead of the scraper blade and apron. The finer and drier the particles, the worse this condition becomes. When loading sand, the best method is as follows:

(a) Go into the loading area fast, lowering the blade slowly and picking up as much sand as pos-



DOWNHILL LOADING enlists the aid of gravity in getting a full load into the scraper in a hurry. Pusher tractor gives added power here for loading hard, unrooted material.

sible by using the momentum of the machine. This will fill the hard-to-reach rear area of the bowl, and is especially effective for rubber-tired prime movers in second or third gear.

(b) Then shift into lower gear to match pusher tractor speed, if one is being used, and pump the bowl up and down. For best results in pumping, drop the blade as scraper wheels roll into the depression made by the previous pump, and raise the blade as the wheels are climbing out of it.

(c) To top out the load, drop the bowl sharply two or three times at the end of the loading area.

2. LOADING ROCK AND SHALES: Working rock with scrapers is at best a difficult job, and maintenance, repair and wear are at a maximum. However, in some of the softer rock and shales, the prime mover with pusher assistance is able to secure a load without prior preparation. Rooting will make the loading problem easier. The larger pieces of rock may have to be pushed aside for special handling, although very large pieces can often be scooped into the scraper bowl by jacknifing the prime-mover around the rock and then pulling the scraper blade under it. Two rock-loading tips that increase loads are as follows:

(a) If possible, load rock by starting the scraper blade in dirt and then catching the blade of the scraper under the ledges and pulling them up into the scraper bowl.

(b) Pick up loose rock or shale on the level or slight upgrade to keep it from sliding ahead of the blade instead of loading.

3. LOADING ROOTED MATERIAL: When loading out material that has been prepared by a rooter, begin at the front of the rooted area and load toward the fill. Finish out the load against the resistance of solid ground to get that last yard on. Step back with succeeding cuts, beginning in loose material and finishing against the undisturbed area left by the previous load.

The Haul

Rubber-tired units typify higher speeds since power and speed have been built into them to fill this special purpose. If good roads are available, these units can haul at speeds up to 35 mph. Speed will, of course, be governed by the roadway and length of haul.

LOADING IN SAND by pumping the scraper bowl leaves an undulating cut, but combined here with downhill loading it helps to get a full load of the loose, hard-to-handle material.

LOADING IN PIT with aid of a pusher tractor is speeded by chain loading—empty scraper pulls up parallel with one being loaded to save the pusher unnecessary maneuvering.

(a) To obtain maximum speed and highest production, keep higher-speed scrapers separated from those of lower speed. No unit can move faster than the rig in front of it unless there is ample provision for safe passing.

(b) Eliminate unnecessary sharp turns and long, looping turns. Try to confine time on all turns to ¼ min or less.

(c) Haul roads should be good enough and well enough maintained to allow travel in high gear except on grades. Patrol graders will keep the road smooth. Eliminate ruts and rough washboard areas to cut down frequent loss of time for acceleration and deceleration, increase safety and reduce operator fatigue. Maintain good alignment and flat grades, as excessive grades require greater rimpull and low gears, resulting in lower travel speeds Keep dust at a minimum with sprinkler wagons. Good haul roads pay production dividends.

(d) Hauling in two directions reduces time lost in turning and increases production, particularly on short hauls or in rolling country.

These various combinations of balance can be handled together:

(a) Figure eight loading (move both ends toward the middle), two cuts can handle a common fill.

(b) Moving one cut to two fills. By loading both ways in the cut and spreading at both ends, more loads are handled with fewer turns.

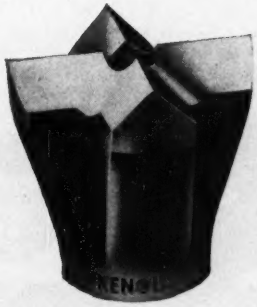
The time saved by these methods can account for a surprising amount of yardage.

Spreading

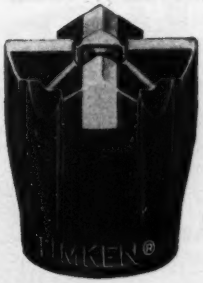
(a) For spreading average materials, set the blade high enough to allow the material to pass under it. Raise the apron and pull the tailgate forward to eject the material in a steady flow to maintain an even depth of spread. Do not force the tailgate forward until the material is first loosened from the apron.

(b) For ejecting and spreading sticky materials, set the blade for the required depth of spread, usually 6 to 8 in. Raise the apron and allow excess material to fall away

(Continued on page 66)



MULTI-USE. Gives lowest cost per foot of hole when full increments of drill steel can be drilled and when control and reconditioning of bits are correct.



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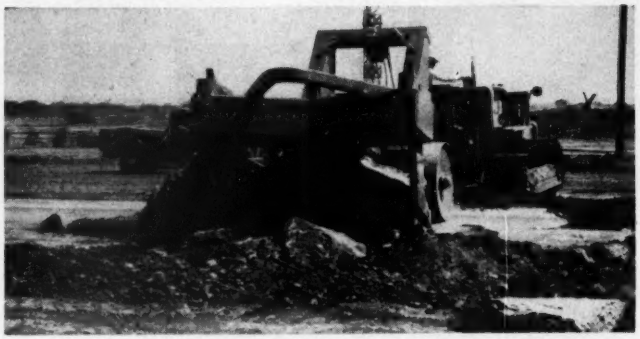
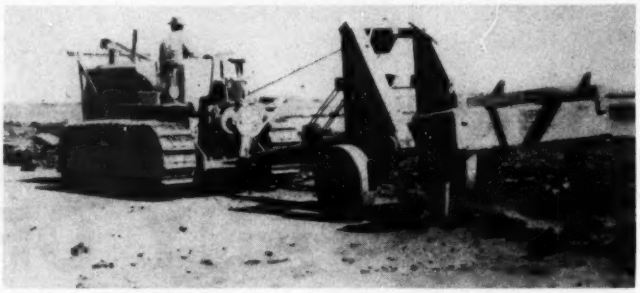


BREAKING OLD CONCRETE is a simple task for powerful tractor and rooter if the teeth are hooked under slab edge and pulled forward, then raised up by rooter's cable lift.



RIPPING OLD BLACKTOP is an exception to the general rule of working rooter at full shank depth. In this material, the teeth are carried just low enough to penetrate the surface.

(Continued from page 64)

before pulling the tailgate forward. Pull the tailgate forward, and raise and lower the apron to loosen materials in front of the bowl. If material still sticks in the bowl, it may be loosened by pulling tailgate forward, returning it a short distance, and pulling it forward again.

(c) Best spreading results are obtained when travel is at speeds corresponding to material flow. Generally speaking, spreading should be accomplished in ½ min or less.

(d) Sand flows freely and can be spread at high speed in thin layers, with the added advantage of using the machine's momentum to keep from digging in and bogging down on loose fills.

Rooter Application

For toughness, simplicity and utility, the rooter is in a class by itself—It will perform a variety of jobs that offer no other ready solution. As an auxiliary, it extends the range and efficiency of both the bulldozer and the carrying scraper. Most common usage is in breaking hard materials for subsequent scraper loading. In this operation, the rooter will handle almost anything from sun-baked clay to solid rock. The limiting factors are, basically, the ability of teeth to penetrate, and the available tractor power. Even in materials that could be handled by big scrapers without prior breakage, considerable savings can result from rooting. Jobs for the rooter are almost without end.

(1) It will quickly rip old blacktop pavement too tough for efficient scarifier or dozer work.

(2) Breaking old concrete. The tooth is started under the edge of the slab and pulled forward until the tractor is stalling. Then the hoist is used to break the slab and the rooter again lowered and the process repeated.

(3) Clearing. A few passes to cut heavy main roots make even the biggest trees light work for a dozer. Here, again, the lift may be needed to assist tractor pull.

(4) Having cut roots around a big stump, hooking a tooth under it and using the lift will in many cases pull it clear, forestalling the necessity of digging it out with a dozer.

(5) Tangled root structures can be removed by using a 3- or 5-toothed rooter, raking to full depth in two directions at right angles to one another. As the teeth become loaded, they should be raised, bringing the accumulated roots to the surface.

(6) Moisture of the fill is sometimes more easily controlled by rooting a few furrows in the cut, watering the furrows, and allowing infiltration and percolation to do the rest.

(7) Breaking 3 to 12 in. or more of frozen ground or stockpiled stone in winter operations, the rooter can often open the job for other tools to go to work.

Experience has shown a few simple rules for best results with rooters.

(1) Root to full depth of the rooter shank, removing shanks if available tractor power is insufficient. When using only two shanks of a three-toothed rooter, remove the center one; or if using only one, leave the center shank.

(2) When turning, raise the shanks from the ground to avoid putting unnecessary twist on shanks and rooter body.

(3) Use the lift of the body hoist to break or raise resisting objects to the surface when the towing tractor stalls.

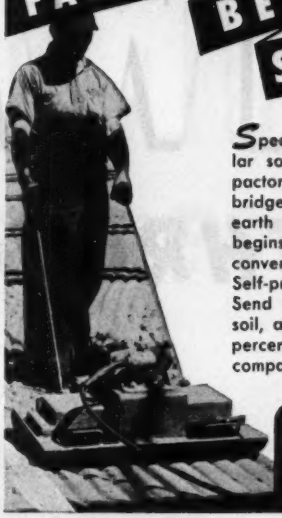
(4) For extra penetration, ballast the rooter body. The weight or down pressure from the dozer blade of a pushing tractor is one way to get extra weight in a hurry.

(5) Blunted, broken or lost teeth give poor penetration and breakage; put extra stress on the rooter; and waste tractor power. Replace or build up worn teeth.

(6) Working in conjunction with scrapers, root an area, then move and work an adjacent area, keeping loading and rooting separate to avoid traffic problems. As the cut comes down, avoid rooting below grade as this only entails recompacting the loosened material.

Ed. Note: The fourth article in this series will appear in the April issue.

FASTER BETTER SOIL COMPACTION



Specified densities are quickly reached in granular soils with the Jackson Vibratory Soil Compactor. For those areas adjacent to structures, bridges, culverts, in trenches, factory floors and earth fill, dam construction, there is nothing that begins to equal the Jackson Compactor for speed, convenience, and thoroughness of compaction. Self-propelling, the operator merely guides it. Send us a sieve analysis or small sample of the soil, and we will tell you what you can expect in percentage of A.S.S.H.O. densities and depth of compaction.

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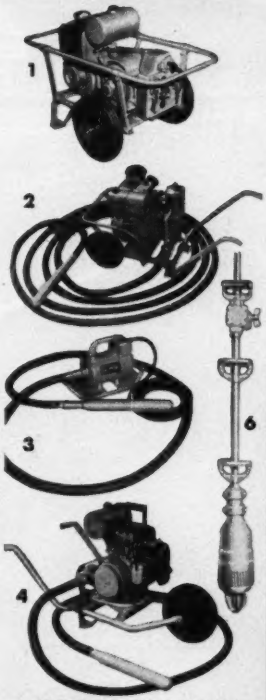

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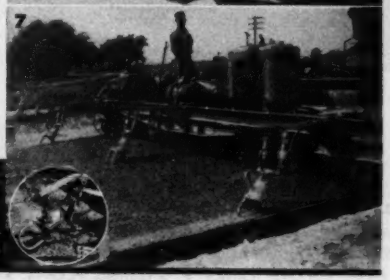

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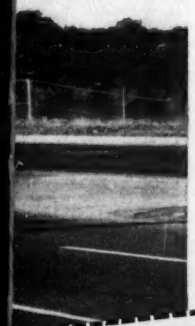

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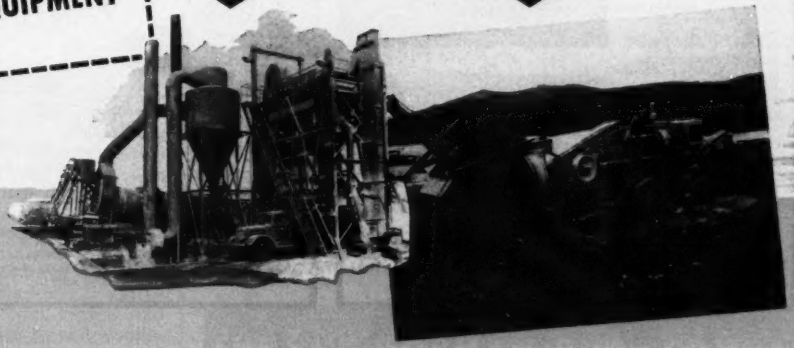
MODEL "E"—the largest of the Cedarapids line of bituminous mixing plants will handle up to two tons at a batch for your big jobs. Or—if you need only a few loads for patching—use the Cedarapids continuous-mix type Patchmaster. Whatever equipment you require for mixing your black top, check with Iowa first for the best—complete plants, pug mills, driers, feeders, bins.

The **JUNIOR TANDEM**—best known of the Cedarapids portable plants sets the standard for quality production, big capacity, flexibility, low maintenance and trouble-free operation on average size gravel jobs. When big volume is required, pick the Master Tandem and for the smaller jobs—the Pitmaster. Add a Cedarapids Portable Primary and you have a rock plant. With Cedarapids equipment, you can meet any specification in any quantity.



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Best application and correct operation of machines for . . .

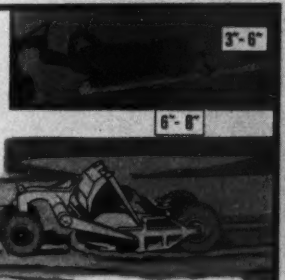
Profitable Earthmoving Detailed in

First, the tractor and scraper should spread along each side of the pipe and unload material as close to the pipe as possible. Alternate loads to each side to eliminate moving culvert out of line.

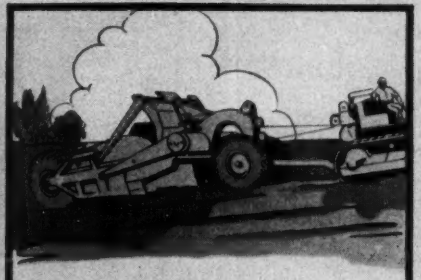
When enough material is present, rack the steering clutches so that the tractor swings and twists as it travels parallel to the pipe, thus pushing material against the pipe and compacting it. Repeat this procedure until about 20 feet of pipe is covered with 12 inches of fill. The tractor can now pass over the pipe without danger of damage.

To cover the remaining pipe, the tractor and front wheels of the scraper should be driven across the covered pipe section. Then turn the tractor short, traveling along side the pipe, and start unloading. When scraper is unloaded, turn the tractor sharply away from pipe so that rear wheels of scraper will not travel over uncovered portion of the pipe. Continue operation until completed.

If possible, unload or spread down hill at highest possible speed. Spread in thin layers for better compaction -- about 6 to 8 inch layers for earth, 3 to 6 inches for sand. Generally, depth of spread is set up in job specifications.



For controlled spreading, the bowl should be lowered to the desired depth of spread. Raise the apron as the tractor moves forward so that the material falls out and uniformly rolls under the cutting edge. Move ejector plate forward steadily for uniform flow.



Smooth the fill and haul road when returning to the cut by allowing the ejector to return about 8 inches while the apron is still in the raised position. Lower bowl until it touches the ground. Then raise the bowl slightly so that it will cut off the high spots.

16

TYPICAL PAGE from Caterpillar's comic-style Operator's Handbook shows how to cover culvert by scraper. With new construction equipment becoming scarcer, this manual can be a big help in keeping present rigs working longer and moving more dirt.

Simple Handbook

WHAT IS PERHAPS the best pictorial demonstration of the correct operation of construction equipment — and certainly the most novel presentation of the subject —is now being distributed by Caterpillar Tractor Co. to its customers and dealers. The medium is a 32-page, four-color Operator's Handbook, printed in comic book style. It is so ably illustrated and its information so easily assimilated that all those concerned with operation of bulldozers, scrapers and rippers can hardly fail to profit from reading it. For these machines, the booklet makes an ideal pictorial companion piece to CONSTRUCTION METHODS AND EQUIPMENT'S series of articles, "Earthmoving . . . An Art and a Science," the third of which appears on page 62 of this issue.

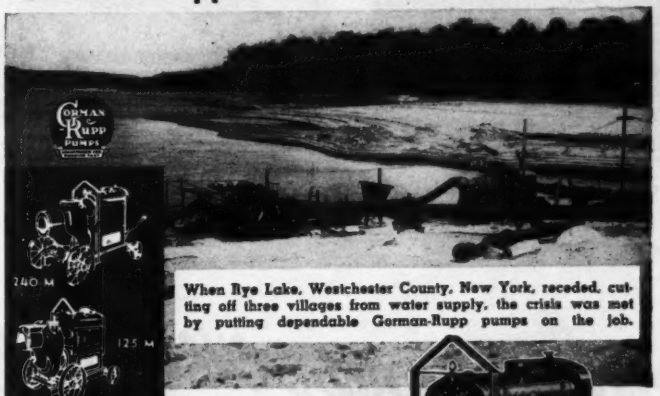
Effective Style

Caterpillar's handbook tells the story of proper and profitable equipment handling through a typical job foreman who talks about the various techniques needed for efficient tractor-dozer operation. Explanation and illustration of these techniques are simplified through the use of familiar scenes in cartoons that show how to get the best performance and job application possible. The booklet contains a wealth of explanatory material that often becomes buried in the usual heavily written and complex manuals. A typical page from the new handbook is shown at the left.

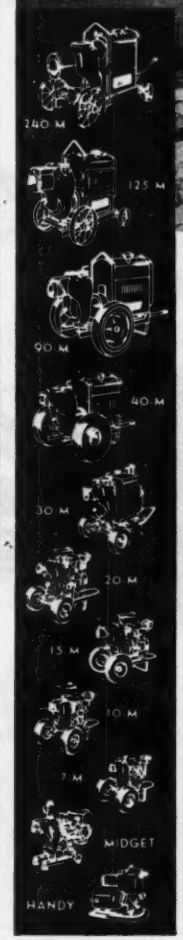
Valuable Information

The handbook's cartoon treatment makes it interesting and easy reading; its fact-packed, machine-saving, money-making tips make it valuable reading. Besides explaining the various parts of bulldozers, scrapers and rippers, it also details their mechanical adjustments and when to use them. More importantly, it pictures the application of these machines to earthmoving jobs — both typical and unusual—and clearly and unmistakably illustrates the do's and don'ts for profitable trouble-free operation.

Gorman-Rupp's Handle Low Water Crisis at Rye Lake



When Rye Lake, Westchester County, New York, receded, cutting off three villages from water supply, the crisis was met by putting dependable Gorman-Rupp pumps on the job.



240-M
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Whatever the job requires: a tiny twenty pound "Handy" pump, a lightweight "Midget" pumping 5500 GPH, or a pump handling up to 240,000 GPH, you will find the most efficient pump is the Gorman-Rupp.

QUICKEST PRIMING: The 40 M, for example, primes at 15 foot Suction Lift in 40 seconds.

HIGHEST PRIMING: High suction lifts are easy for Gorman-Rupp Pumps.

FASTEST PUMPING: More water per gallon of fuel than any other comparable pump.

DEPENDABLE: The most simple pump built — will not clog. Trouble-free, requiring a minimum of maintenance.

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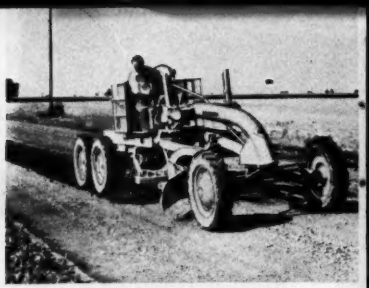

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V OR BLADE-TYPE SNOWPLOWS Interchangeable, hydraulically operated. Blade plow may also be used for backfilling and light 'dozing.

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Cuts and Cleans Ditches

Strips Sod

can handle so great a variety of jobs —at a new low cost

Finishes Between Forms

Grades Shoulders

Feathers Out Windrows

Levels Subdivisions

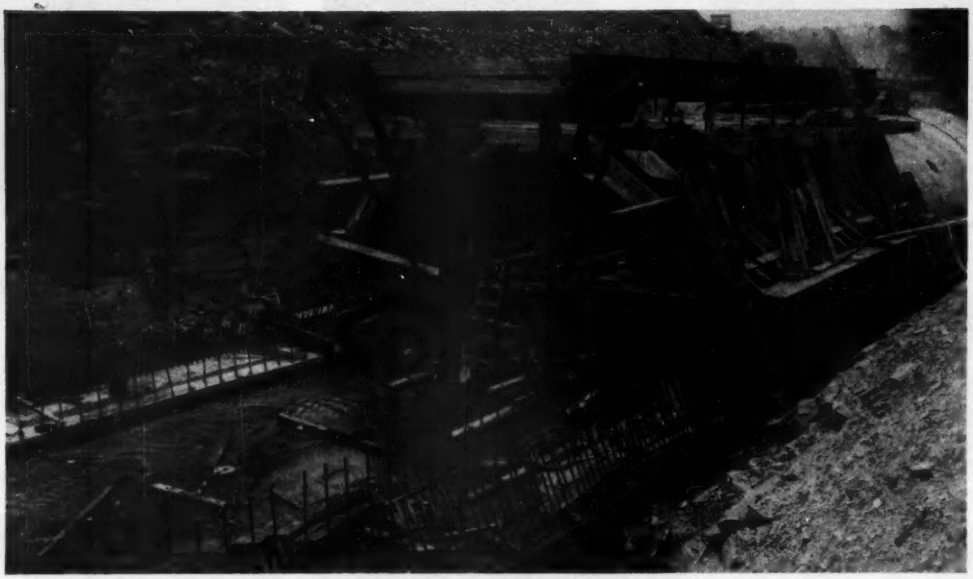
Handles Terracing

Works and Spreads Oil Mix

Plows Snow

Loads Surplus Dirt

Loads Snow



OUTER FORM and traveling carriage used to construct two 20-ft concrete arch culverts have been moved into place on footings and support reinforcing steel. Inner form meanwhile supports previous pour for five days; is then moved into place on same set of tracks which run on 3½-ft thick slab. Arches, 869 and 212 ft long, carry Speers Run Creek under east approach and abutment of four-lane highway bridge and into Monongahela River at Belle Vernon, Pa., for Pennsylvania Dept. of Highways.

Traveling Forms Speed Tough Arch Culverts

By R. B. HOWARD Field Engineer, The Contracting Division, Dravo Corporation, Pittsburgh, Pa.

FOOTING AND INVERT POURS are one step ahead of arch forms. Note heavy bulkhead and bracing on inner forms in background. Dravo Corporation's Contracting Division, Pittsburgh, Pa., built culverts along with 11 concrete piers and two abutments for bridge. Outer and inner carriage run along invert on same set of rails. Shorter culvert has no concrete base slab and footings are supported by piles. Steamboat jacks brace inner hinged form in place and later peel it from concrete for successive moves.

ALL THREE SETS of forms are in use simultaneously here. Bolt and nut arrangement in foreground adjusts height of outer form. Steel bolts are welded to plates in turn bolted to top inner face of 14x16-in. uprights on 5-ft centers. Bolts, passed through wales and uprights, tied outer form bottom to previously poured footing. Holes are left in sheathing between uprights through which elephant trunks will pour 8-ft thick arch bases. Longer culvert was poured in 25 monoliths, shorter in 7.

TRAVELING FORMS, suspended from steel carriages, hastened the completion of two 20-ft concrete arch culverts for the Contracting Division of Dravo Corporation, Pittsburgh. The culverts, one 869 ft long and the other 212 ft, carry Speers Run Creek into the Monongahela River at Belle Vernon, Pa., passing under the east approach and abutment of a new four-lane highway bridge over the river. The project is part of the Pennsylvania Department of Highways long-range program to connect southern Ohio with the Pennsylvania Turnpike while bypassing Pittsburgh.

In all, three sets of forms were designed by Dravo engineers and built on the job site. The longer arch, built on solid ground, had a 3½-ft thick concrete invert deck between continuous footings. When this base pour had set, tracks were laid along the invert and the outer arch form wheeled into place. Reinforcing was hung from this outer form; then the inner arch form was set on the same tracks, and the section poured. They were moved ahead for each monolith. The shorter arch had no base slab, and softer ground conditions necessitated driving concrete piles to support the footings. The same traveling forms were used for its construction. The required 10,000 cu yd of concrete for both culverts was delivered from a Dravo mixer-barge on the main bridge pier job and hauled by truck. During operations the stream was temporarily diverted.

The outside arch form carriage consisted of a steel frame made from two 24-in. WF beams 35 ft long fastened near each end with a 14-in. steel beam cross-member 18 ft long, and braced with 6x6-in. timber spreaders.

Two telescoping legs supported the cross-member on the leading end, and were in turn carried by 18-in.-dia wheels running on 8-ft-wide tracks. Angle-iron struts braced the legs to the main beams, and a horizontal spreader was placed between them just above the wheels. A four-wheel, rubber-shoed dolly, running on top of the previously poured section, supported the cross-member on the trailing end. Before each move the front end of the carriage was jacked up, and adjusting pins inserted. On the trailing end, two jacks lifted against the rear cross-member and the dolly was wheeled into place. These rear jacks stood on pedestals welded to a steel band which fitted over the top curve of the arch and was held securely by an imbedded 1-in. anchor bolt.

Outside Forms

Main members of the outside arch form were upright 14x16-in. timbers, 16 ft long, spaced on 5-ft centers, eight along each side. These slanted inward and were sandwiched near the top between two 3x10-in. horizontal spreaders. Knee braces (3x12s, 12 ft long) were spiked to the spreaders and through filler blocks to the side uprights. Curved segments of 3x12 stock were cut and fastened to the heavy frame where the latter could not receive sheathing directly. Sheathing was 3-in. stock faced with ¼-in. plywood. Vertical adjustment of the outer form was accomplished through 1½-in.-dia steel rods which passed down through both flanges of the main carriage beams and were welded to 1-in. plates, in turn bolted to the inner face at the top of each timber upright. Adjustment nuts on the threaded upper end of each rod positioned the form correctly. An opening 12 ft wide was left unsheathed at the top of the arch to facilitate concrete placement, and 1½-ft square holes in the sheathing between the uprights permitted use of elephant trunks to pour the 8-ft-thick arch base. Form bolts, 1½-in. dia, passed between double 4x10-in. wales and through the bottom of each timber upright, anchoring the arch bottom to high tensile steel rods previously set in the footing pour on 5-ft centers.

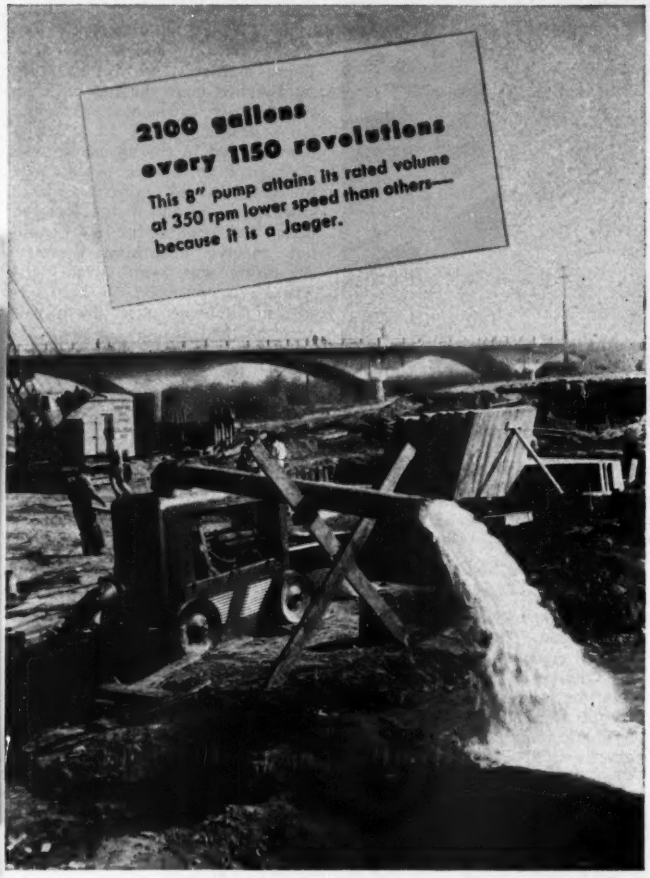
Form Carriage

A steel and timber carriage, 32 ft long, supported the inner arch form and ran on the same set of tracks. Bottom beams were 3½x10-in. channels and tops were 12x12-in. timbers. Four sets of axle-connected wheels supported the carriage. Above each of the eight wheels was a vertical leg made in box shape from steel plates. These were capped with bearing plates which, in turn, were bolted to the underside of the upper timbers. Pieces of 6x12s were fitted between the flanges of the lower channels to transfer the weight directly from the legs to the wheels. Timber and steel diagonal bracing completed the frame.

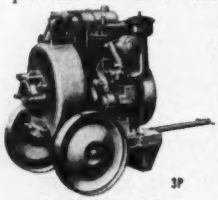
The inner form itself was made up of 2-in. sheathing, also faced with ¼-in. plywood and fastened to six arc segments cut to the shape of the arch from 4x10-in. stock.

(Continued on page 76)

JAEGERS pull stronger, pump longer


2100 gallons
every 1150 revolutions
This 8" pump attains its rated volume at 350 rpm lower speed than others—because it is a Jaeger.

Because Jaeger dewatering pumps are built oversize, to produce full rated volume at easier speeds, they also hold more priming water and are subject to less abrasive wear. Combined with double priming action and positively lubricated seal (Jaeger patents) they insure fast, sure priming without vapor lock on the toughest pulls, sustained efficiency on non-stop pumping, and thousands of extra hours of service from both pumps and engines.



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Twenty-five such sets, on 1½-ft centers, ran the length of each inner form. Principal supporting members were three-rib frames of 4x12s, directly under each set of arc segments. Each pair of oblique legs, 11½ ft long, was hinged at the upper end to a 12-ft horizontal member by 2⅞-in. extra heavy steel pipe needled through 3-in. holes. Two segments were attached to each of the three ribs with 2x10-in. scabs and filler blocks. Eight 25-ton jacks were mounted on the carriage, one over each leg, to adjust the inner form to correct height. They lifted against steel plates on 12x12 stringers. Side panels were spread apart with a 30-in. steamboat ratchet at each of the eight legs and wedged in place with horizontal timbers.

With both forms aligned and anchored, end bulkheads were attached and the section concreted. Two days after pouring, the outer form was jacked up, moved ahead, and reinforcing was hung from it. The inner form remained in place five days more to support the green concrete, then it was collapsed, lowered and wheeled ahead for the next pour. All three sets of forms worked simultaneously.

Dravo forces poured the longer culvert in 25 monoliths, 14 of which were on a long radius curve. Then followed the shorter arch, in 7 monoliths. The entire project, including two culverts, 11 concrete bridge piers and two abutments was completed in the allotted time of 11 months.

Start Service Corps

WHITE MOTOR CO. has mobilized its parts and service operations to keep trucks rolling during the emergency. They have formed an Emergency Service Corps, with a 10-point program: (1) Register all trucks, estimate their future service needs and stock the parts where required; (2) Issue identification tags to speed ordering of parts; (3) List all service centers; (4) Ease ordering with special forms; (5) Report monthly on parts availability; (6) Send bulletins of latest maintenance methods; (7) Make complete units available on an exchange basis; (8) Promote better driving through manual; (9) Alert service centers for faster maintenance; (10) Conserve machines by scientific preventive maintenance plan. It all adds up to a valuable service.

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HOW TO GET More Production . . . Less Maintenance

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of this big factual booklet and other helpful data of the QUAKER C M P program. No charge, no obligation. Yours to help you get more out of industrial rubber products.

Now, to meet the need to produce more with less, put the QUAKER Conservation Maintenance Plan to work in your operations.

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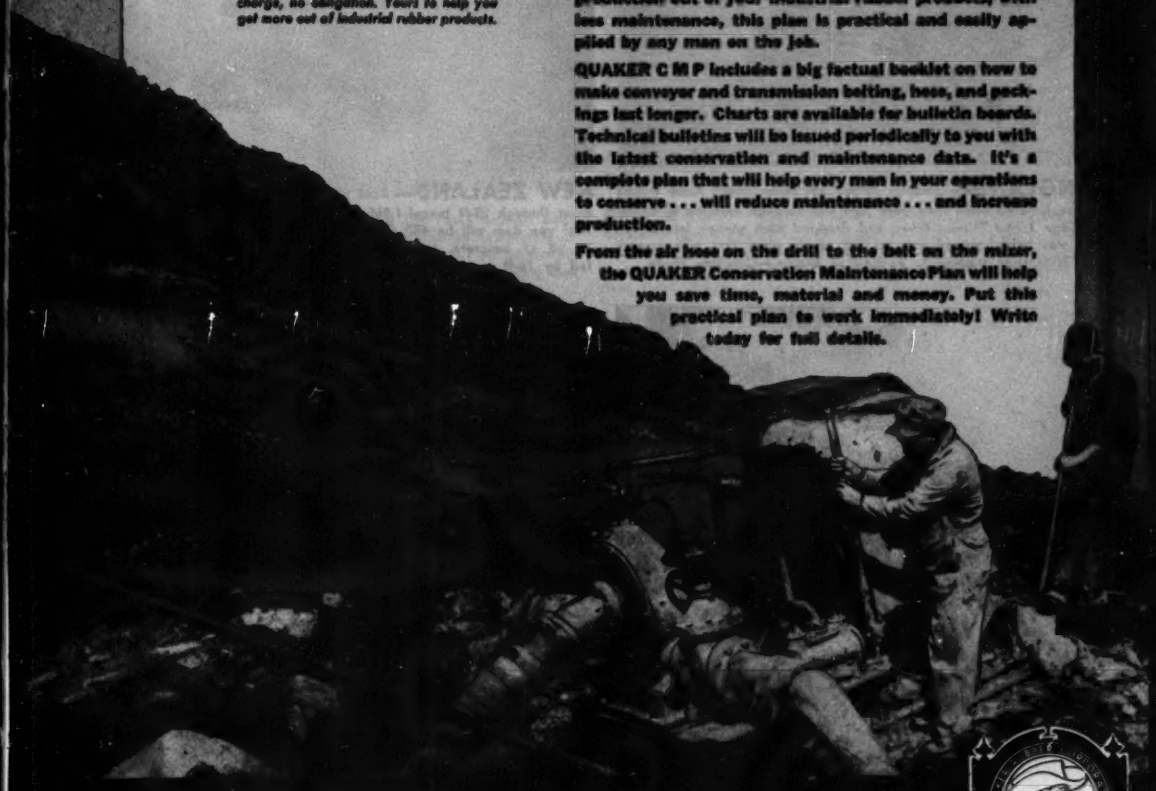
QUAKER C M P includes a big factual booklet on how to make conveyor and transmission belting, hose, and packings last longer. Charts are available for bulletin boards. Technical bulletins will be issued periodically to you with the latest conservation and maintenance data. It's a complete plan that will help every man in your operations to conserve . . . will reduce maintenance . . . and increase production.

From the air hose on the drill to the belt on the mixer, the QUAKER Conservation Maintenance Plan will help you save time, material and money. Put this practical plan to work immediately! Write today for full details.



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DIVISION OF H. K. PORTER COMPANY, INC.

PHILADELPHIA 24 PENNA BRANCHES IN PRINCIPAL CITIES

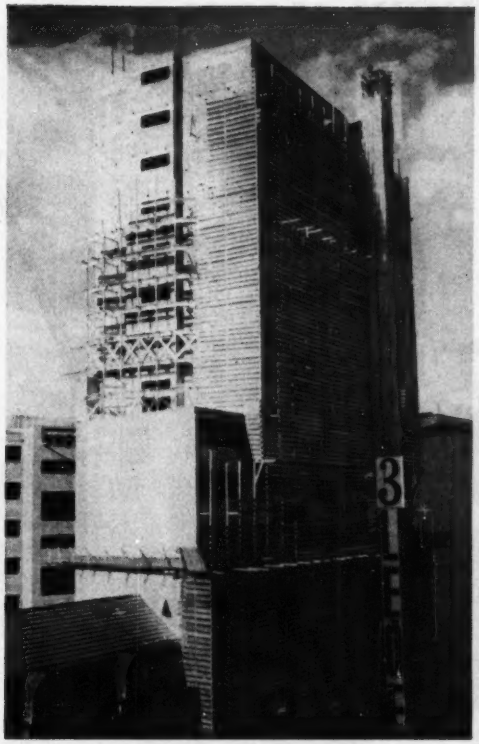
CONSTRUCTION 'ROUND THE WORLD...

ENGLAND—London's bridge has fallen down! Army troops miscalculated when they were part way through erection of Bailey bridge across Thames River, and dropped 60-ft section into water. It was being pushed out to first of six piers that will support 1,150-ft span leading to Festival of Britain.—Combine Photo

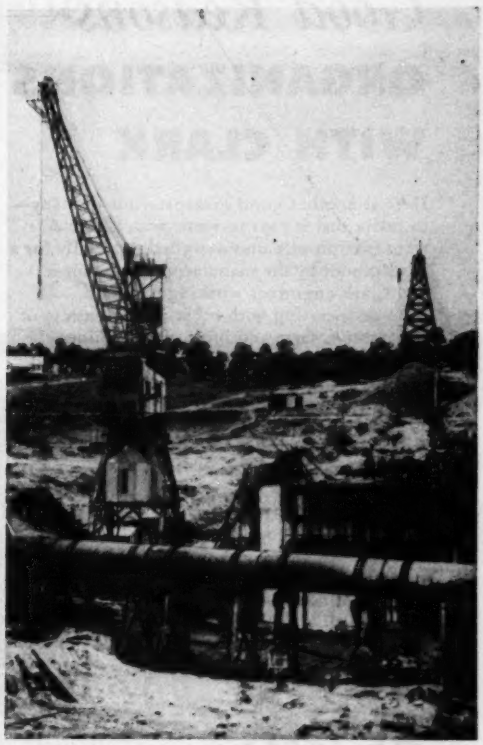
NEW ZEALAND—Rock plug is blasted to divert Waikato River through 25-ft tunnel 1,865 ft long around Maraetai damsite. Archtype dam will be 450 ft long, 200 ft high, requiring 110,000 cu yd of concrete. Its five 36,000-kw turbo-generators will be fed by 16-ft penstocks 250 ft long.—Authenticated News Photo

CYPRUS—American construction equipment gets around—witness this Ingersoll-Rand compressor and drill on eastern Mediterranean island. They're at work on $750,000 project for 183 mi of new roads and 300 mi of forest paths.—Eastern Publishers Service

GERMANY—Twin floating A-frame derricks maneuver into position to lower an assembled girder section to piers of Frankfurt's Peace Bridge over Main River, replacing structure destroyed in war. Assembly is 443 ft long, weighs 340 tons.—Wide World



BRAZIL— Construction accidents in Sao Paulo brought code regulation that all work abutting on street must be completely inclosed to prevent tools and materials from raining on passers-by. It adds plenty to construction costs, and makes this building look like huge water-cooling tower.—McGraw-Hill World News



AUSTRALIA— Glenelg River will flow backwards when Rocklands dam is completed. Irrigation structure 170 mi from Melbourne will form 264,000-acre-ft reservoir, whose waters will flow through tunnel back under mountains. During construction (above), river flows through damsite in pipe conduit.—Eastern Pub. Serv.

ROMANIA— Construction of Danube-Black Sea Canal is being rushed to provide 60-mi shortcut so large vessels can avoid swampy Danube delta. Most of machinery comes from Russia, with satellite nations supplying diesel engines, steam excavators and locomotives. Many of the machines look as though they have been copied from those developed in the U. S. In view above, tractors and scrapers excavate on top of hill, while steam and diesel shovels load industrial railway and trucks.—Eastfoto

Good Reasons—WHY MANY ORGANIZATIONS WORK WITH CLARK

Here is another good example—one of many—to prove that it pays to work with Clark: A transmission-axle unit designed especially for a road grader by the manufacturers' engineers and Clark engineers working together.

In cooperating with other manufacturers of automotive, farm and industrial machi[illegible] Clark relies mainly on its own [illegible] experience gained in dev[illegible] its own family of pro[illegible] experience embrac[illegible] practically all a[illegible]ons of power trans[illegible]. Each of those p[illegible] is an efficient, hard-working proof that it's "good busi[illegible]" to work with Clark.

You, too, may find important benefits in having Clark work with you. There's no cost or obligation in finding out—just write us.

CLARK
EQUIPMENT COMPANY
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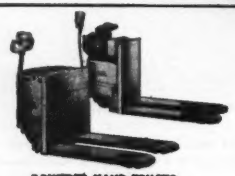
AND TOWING TRACTORS

ELECTRIC STEEL CASTINGS

GEARS AND FORGINGS

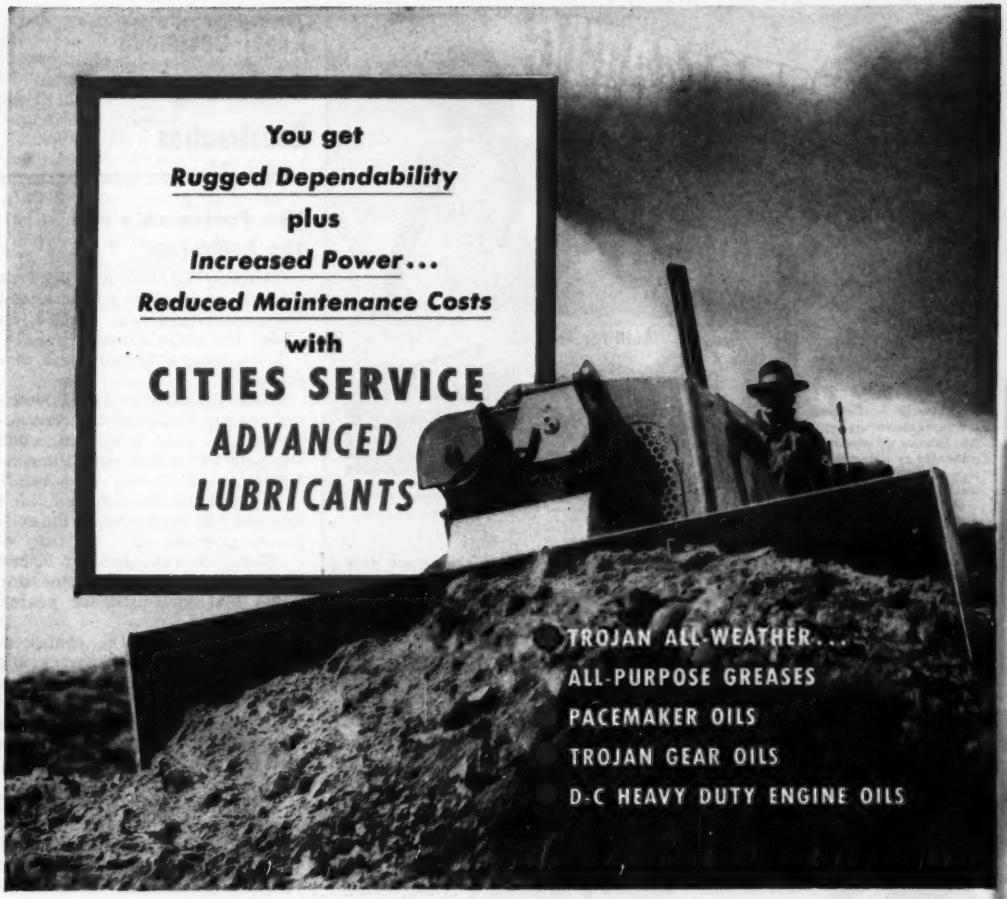
STREET RAILWAY CAR TRUCKS

AXLE HOUSINGS


POWERED HAND TRUCKS

FRONT AXLES

REAR AXLES (SPECIAL)



EARTH MOVING and construction equipment like this powerful bulldozer takes severe punishment in even normal operation. Protect it from excessive wear... improve its performance with the finest lubricants available.

Cities Service has a remarkable new line of all-weather, all-purpose lubricants. These top quality petroleum products slash maintenance costs... reduce equipment down-time... step up the efficiency and power of all units under all kinds of heavy duty operating conditions. Learn today how you can gain big increases in the productive capacity of your units. Mail coupon below.

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SAVE 50% IN TIME, LABOR, EQUIPMENT COSTS...

"Built for Any Job"

Adjustomatic Scaffolding is adaptable to any type job. Exterior or interior—stationary or rolling platforms. For sale or rent by dealers in all major cities—or write for full information.

Positive locking device. No bolts, nuts, pins, etc. Just flip the lock!

Lock cannot tie up from use, rust, mortar. Instant locking action throughout entire life of scaffolding.

NO LOOSE PARTS—Only two basic parts, end frames and braces. No parts to lose or drop.

SAFER—Platform guards are built-in, planks cannot slip over sides. Ladders inbuilt, too—nothing to drop. Larger, 1.75" O.D. steel tubing. Milled, electrically welded joints.

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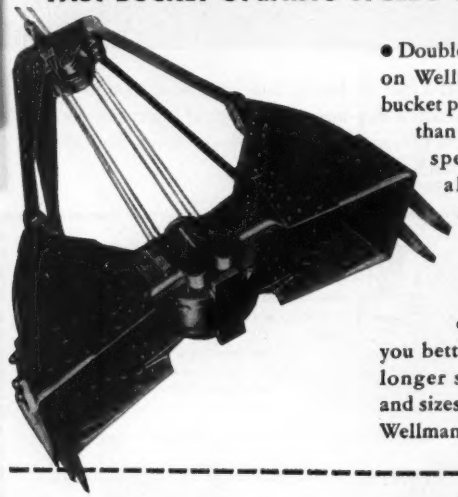
STRONGER—Each frame will carry 30,000 pounds. Approved by Safety Codes. Used on many of the country's largest scaffolding jobs.

AUTOMATIC DEVICES, INC. 1260 Hodiamont Ave. ST. LOUIS, MO.

WELLMAN *Williams Type*

FAST BUCKET OPENING SPEEDS OPERATIONS



● Double-hinge construction on Wellman's multiple-rope bucket permits faster opening than a single hinge. This speeds up operations, also gives a bigger spread in the open bucket for the same headroom.

Wellman's welded-design buckets offer you better performance and longer service. In all types and sizes you'll do better with Wellman!

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THE WELLMAN ENGINEERING COMPANY
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Legal Decisions Concerning Construction

The Partnership and the Individual

THE CONTRACTOR and B were Georgia contracting partners, and the partnership was carried on under B's name alone.

Then the partnership was dissolved.

After the dissolution B, without the knowledge of the contractor, gave a note to C, and, when the note fell due, C sued the contractor and B.

"I didn't sign the note and didn't know it had been given," the contractor pointed out.

"The note was signed by B, and that was the same partnership name that you used for years," C contended.

"I admit that," the contractor demurred, "but the partnership was dissolved before the note was given."

"Being signed in the partnership name, the court will presume that it was given for a partnership debt," C argued.

"Being signed in B's individual name, the court will presume that it was for his additional debt, the burden is on you to show that it was a partnership debt, unless you can prove that I am clear," the contractor maintained, and the Georgia Court of Appeals ruled in his favor in Citizens N. Bank vs Jennings reported in 134 S. E. 114.

"It appears, without dispute, that the partnership was dissolved before the execution of the note, presumptively B did not sign it on behalf of the partnership, since he would have no right nor authority to do so," said the Court.

The Grasping Bank

THE CONTRACTOR HAD constructed a grain elevator for an Oklahoma owner and had taken a crop mortgage for the costs.

"We can't carry you any longer, unless you give us a mortgage on the crop to be raised this year," the local bank told the owner.

"The best I can give you is a second mortgage," the owner agreed, and the second mortgage was duly executed and recorded.

That year the owner raised nearly $6,000 worth of wheat on the farm, sold it to a grain dealer, and, before the money was paid, both the bank and the contractor claimed the proceeds.

"I don't want to buy a lawsuit, along with the wheat," the grain dealer remarked, "and I am willing to pay the money in to the bank, and let you fellows settle your own disputes."

"That'll be satisfactory, if the bank'll agree to pay over the money to whichever one has the better claim," the owner proposed.

"That's satisfactory to us," the bank agreed, got possession of the money, applied it to the owner's debt to the bank, and the contractor garnisheed the money.

"To permit the bank to secure the deposit, or induce the parties interested to permit the deposit to be placed in the bank, by reason of an agreement such as was made in this case, and then without authority of any character convert the money to its own use and benefit, would, in our judgment, be a grossly unfair and unjust rule, not in keeping with good conscience and fair dealing and contrary to law," said the Oklahoma Supreme Court, in Iselin vs Farrow reported in 242 Pac. 528 ruling in favor of the contractor.

Declaring a Dividend

THE STOCKHOLDERS of the Construction Co. were assembled in session.

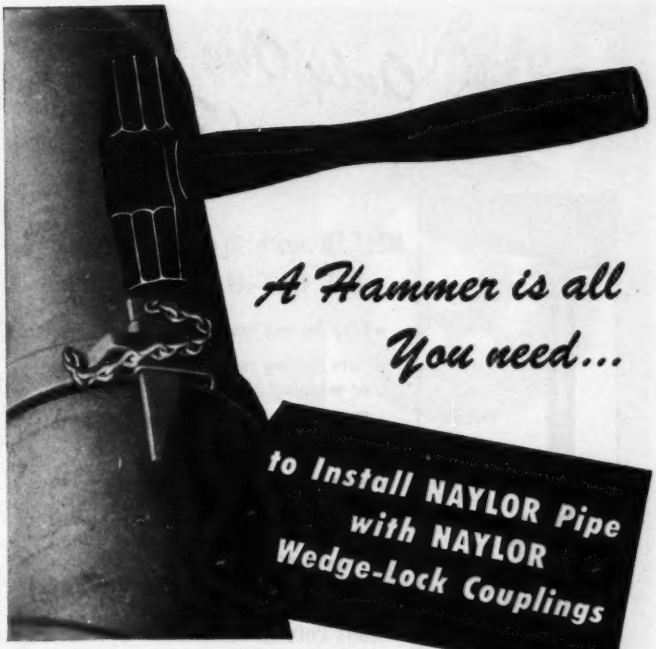
"I move that we declare a dividend of 10%," the new stockholder broke in, and there were half a dozen willing seconders. It passed unanimously and enthusiastically, the corporation sent out the dividend checks in the usual way, then somebody objected and attempted to upset what had been done.

"Only the directors can declare a legal dividend," the "kicker" protested.

"That may be true, but the directors adopted what we did, paid the dividend, we've sent our checks to the Income Tax man, he won't refund, and neither will we," the stockholders retorted.

On this point the rule is that, while the board of directors is the proper body to declare a dividend, yet if a dividend is declared by the stockholders, and the directors adopt it and carry it out, the dividend is legal, where the rights of creditors are not affected.

This rule is illustrated by the



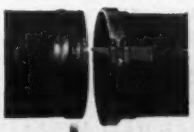
Just 4 Simple Steps Do the Trick

1

Use hammer to drive wedge into the two parallel lugs to open coupling.

2

Slip coupling over pipe end and put next joint of pipe in place.



3

Drive out opening wedge so coupling snaps into place on grooved ends of pipe.

4

Drive wedge home into the three lugs on coupling.

It's a simple matter to install Naylor large diameter pipe with Naylor Wedge-Lock couplings—on high or low pressure air and water lines, ventilating lines, dredging lines, and other piping required in construction service.

These one-piece, positive type couplings slip into the grooved ends of Naylor pipe, providing a tight, leakfree joint. And a hammer is the only tool needed to assemble or disassemble the line.

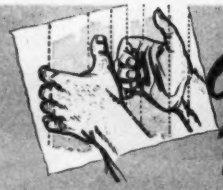
Lines can be made up with only one side of the pipe in the open. When uniform lengths of pipe are used, replacements of joints can be made at any point without disturbing the balance of the line.

For full details on this practical Naylor combination for contractors, write for Bulletin No. 507 today.

Nothing simpler... nothing so fast.

NAYLOR PIPE

Naylor Pipe Company, 1268 E. 92nd St., Chicago 19, Ill.
New York Office, 350 Madison Avenue, New York 17, N.Y.



Only One Pair of Hands

NEEDED with ROOSHORS THE ONE-MAN SHORE

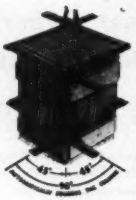
- Easy for one man to set and remove.
- Cuts shoring costs—no cutting, fitting or wedging.
- May be used over and over—floor to floor, or job to job.

Rooshors save in *time* and material . . . so naturally save money. They give instant adjustment in their range of three sizes: 8 ft. to 14 ft.; 7 ft. to 13 ft.; and 5 ft. to 9 ft.—higher stories are shored with Roos Extension Shores. Rooshors save every time you use them.

ROOS COLUMN CLAMPS

- Save Time
- Cut Column Forming Costs

Roos Column Clamps are so simple and foolproof to use (no "rights and lefts") that even inexperienced workers quickly develop efficiency. Roos Clamps automatically square the column forming.



Rooshors and Roos Column Clamps are available for rental from warehouse stocks in principal cities from coast to coast.

—Write today for Bulletin 151

BAKER-ROOS, INC.
602 WEST McCARTY STREET
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MAN-POWER PROBLEMS?

An advertisement in the SEARCHLIGHT SECTION (classified advertising) of this publication will place your man-power needs before the most likely prospects—the readers. For information write

Classified Advertising Division

CONSTRUCTION METHODS & EQUIPMENT
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West Virginia case of Thiry vs Banner Window Glass Co., reported in 93 Southeastern Report, 958, where the evidence showed that a stockholders' meeting, including stockholders and directors, declared a dividend, payments were made thereon, and in a suit brought by a stockholder for the balance of the dividend, the corporation set up that the dividend was illegal.

"And as against the stockholder, denied his pro rata share of the dividend declared, the corporation cannot justify its action on the ground of its illegal action," said the Court.

The Cement Check

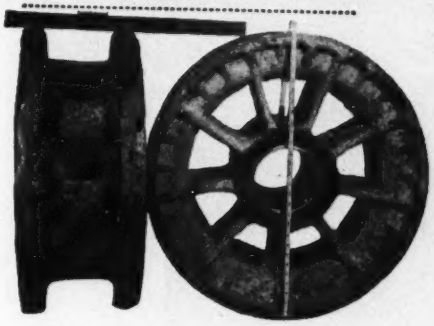
"THERE'S A FELLOW here who wants to buy some cement I've got left over and give a check on your bank, but I won't sell unless you say the check's good," the contractor telephoned.

"Go ahead—the check'll be paid," the Mercantile Bank assured him. The contractor delivered the cement and accepted the check. The customer resold the cement and deposited the proceeds in the Mercantile Bank, but the bank refused to pay the customer's check, and the contractor sued the bank in the Oklahoma Courts.

It appeared by the evidence that the customer had been a depositor of the bank for some time, and that it was his practice to buy goods in small lots, giving his check in payment, immediately sell the goods and deposit the proceeds in the bank; and that up to the time of this transaction his checks had been paid upon presentation. It further appeared that he had funds to his credit to pay the check, except for the fact that the bank had applied his deposit account to the bank; that about this time he became wholly insolvent, and disappeared from that part of the country, leaving considerable indebtedness to various persons, including the contractor.

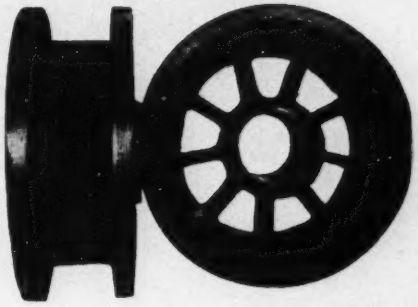
"As his checks were always paid up to the time of this transaction involved in the case at bar, it would be reasonable to infer from this course of business covering a considerable time heretofore detailed, that there was an agreement between the customer and the bank upon which this course of business was based," said the Oklahoma Supreme Court in deciding in the contractor's favor in Singer vs Citizens Bank of Headrick which can be found under 193 Pac. 41.

Now its worn out...



Note the slant of the level which indicates extent of rim wear on this shovel idler wheel.

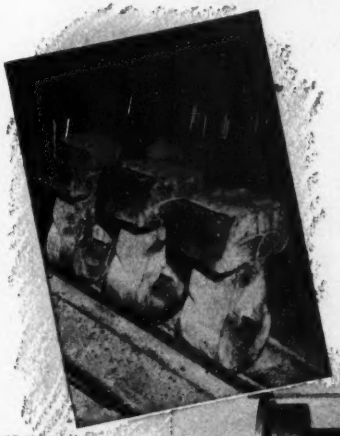
NOW IT ISN'T!



Automatically rebuilt with Stoody High Carbon and hard-faced with Stoody 105, idler is now better than new!

STOODY HARD-FACING ALLOYS

reclaim worn and discarded parts for new records and service!



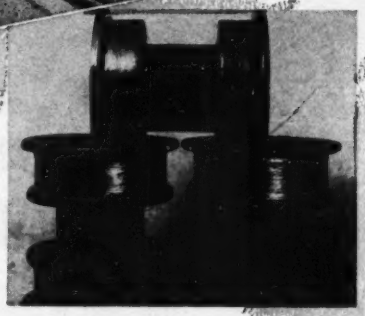
A worn part isn't always a useless part—in fact, Stoody Hard-Faced parts are generally *better* than new replacements. *They give more life*—last two or more times longer. *They cut replacement costs. They eliminate downtime for changes. They save labor costs!*

The uses for Stoody Hard-Facing Alloys on all heavy equipment are almost unlimited... They fight abrasive wear, heat, corrosion and impact or combinations of these factors. And reclamation cost is usually only a fraction of new part cost!

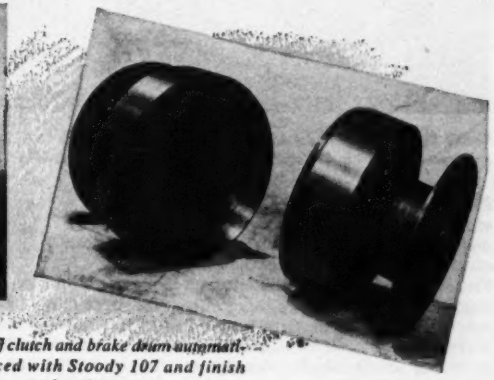
To get more life from all equipment—to save on steel, hard-face with Stoody Alloys today. It's good wear-insurance at all times... extra important when replacements are difficult or impossible to obtain!

AUTOMATIC HARD-FACING SERVICES—Much equipment is now being hard-faced automatically by independent job shops with big savings in time, improved appearance and lower cost. Names of organizations nearest you and equipped for automatic hard-facing will be forwarded upon request.

STOODY COMPANY 11972 East Slauson Ave., Whittier, California

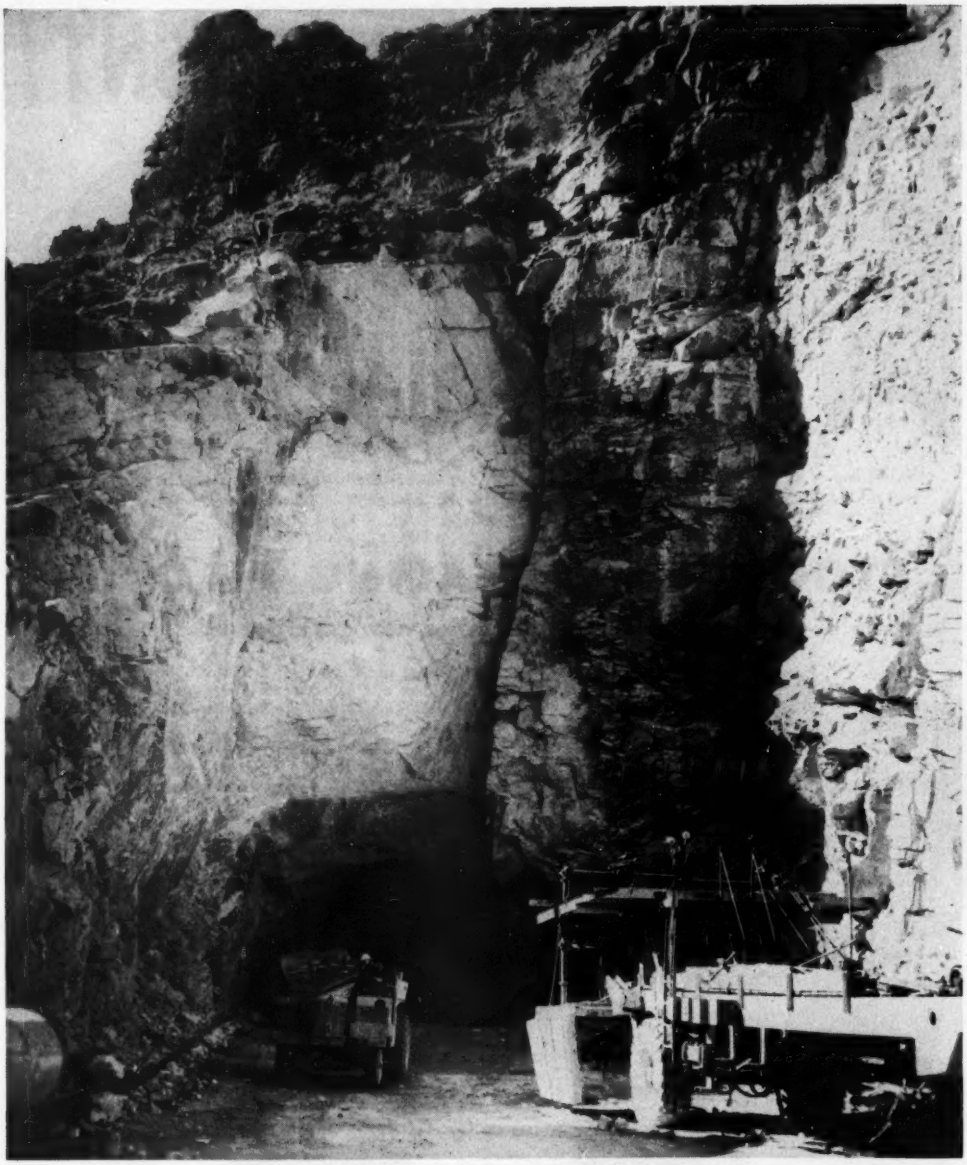


ABOVE
These hammer mills are repeatedly built up, then hard-faced manually with Stoody Self-Hardening 21. With hard-facing their life is several times greater.



RIGHT
Tractor Rollers are almost smooth as new with this automatic application of Stoody 105.

RIGHT
Power Take-Off clutch and brake drum automatically hard-faced with Stoody 107 and finish ground on faces.



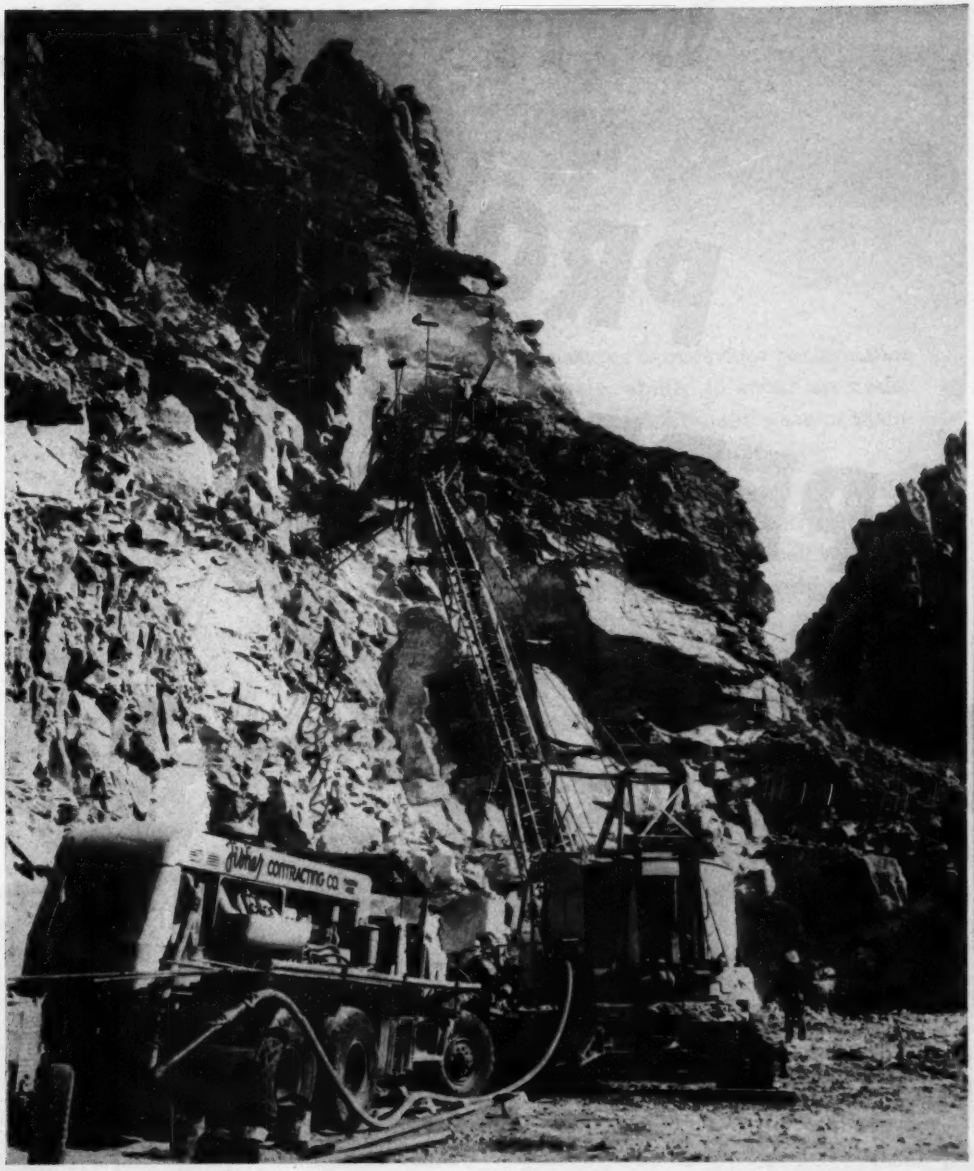
SHEER CLIFF dwarfs portal of Arizona's newest and longest highway tunnel—a 1,200-ft, $580,000 bore through solid rock. By attacking 25x44-ft tunnel on top heading, Fisher Contracting Co. is able to use old drill jumbo at right, which is from smaller job.

Simple Adaptations Lick

TWO SIMPLE ADAPTATIONS—of job procedure to existing equipment, and of special equipment to unusual conditions—are helping Fisher Contracting Co. lick a tough highway tunnel and grading project in Arizona. The firm planned their tunnel attack so as to be able to use a small jumbo already at hand; and they rigged a drilling platform on a crane boom for work on sheer cliffs.

The job is Arizona's costliest stretch of road: $830,000 for a tunnel and ½ mi of grading on U. S. 60 in the rugged mountains east of Superior. "It's hardrock highway from start to finish," says contractor Del Fisher. "There isn't a shovelful of dirt on the entire alignment."

The tunnel replaces an existing



HIGH BLUFF is drilled for blasting on Fisher's ½-mi, $250,000 new alignment leading to tunnel. Platform on end of 70-ft crane boom lets drillers reach these otherwise inaccessible places. Approach cuts, like tunnel, are 100% through rock.

Hardrock Highway Job

300-ft bore and is being driven 1,200 ft through a mountain spur, making it the state's longest. With a 44-ft width and 25-ft height, it calls for removal of 43,000 cu yd of solid rock. Fortunately, while tough to excavate, the rock requires no support.

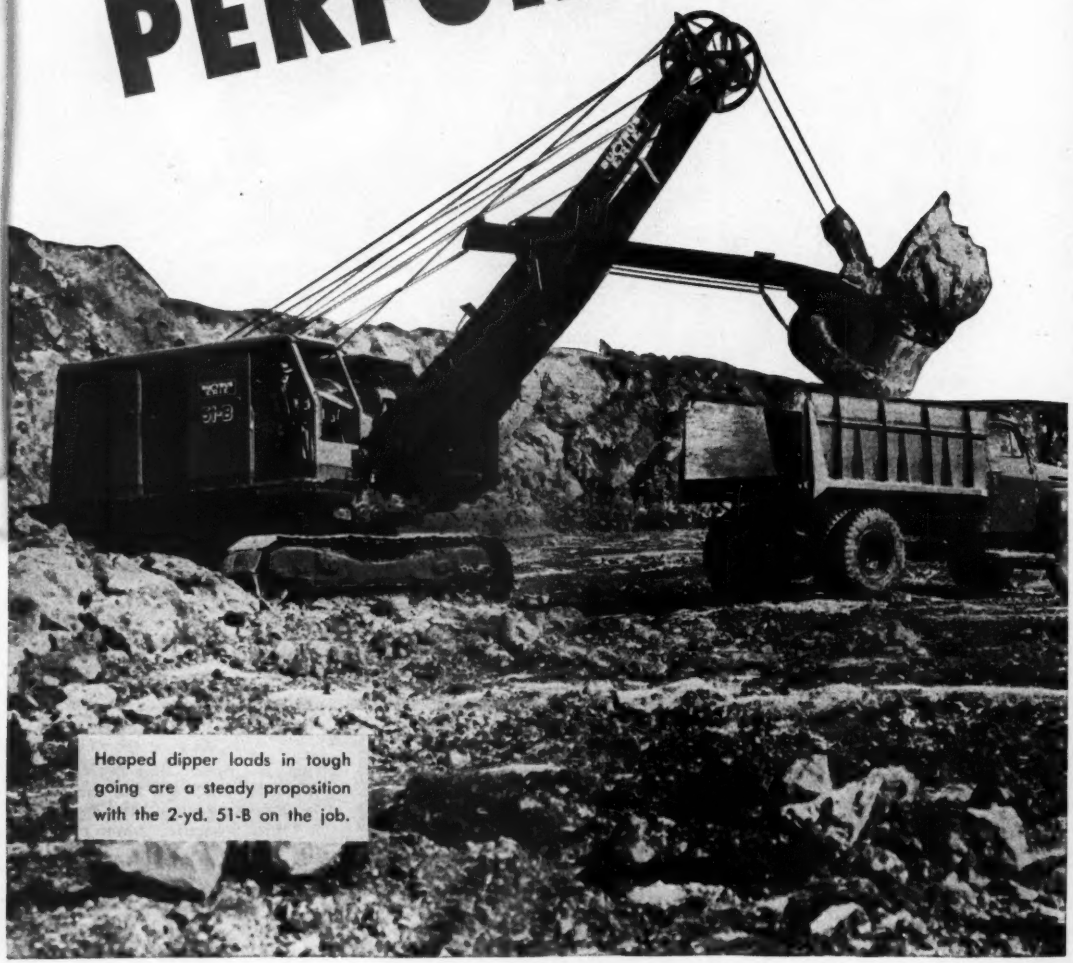
Tunnel size is not an unmixed blessing—its width permits mucking with shovel and trucks, but its height is too great for Fisher's drill rigs. So, rather than build a new jumbo to reach the full face, they are attacking on an 18-ft top heading with a smaller jumbo on hand from another tunnel job. The remaining 7 ft will be benched out after the top cut is holed through.

The jumbo consists of a 60-ft rubber-tired chassis with a rear

(Continued on page 91)

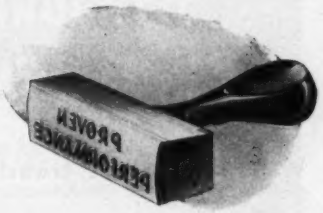
---Mark

PROVEN PERFORMANCE



Heaped dipper loads in tough going are a steady proposition with the 2-yd. 51-B on the job.

# of a Preferred Excavator



THE four most important measures of excavator performance are a smooth fast work cycle, ability to stand up under punishment, quick front end convertibility, and ease of maintenance. Bucyrus-Erie fills the bill on all four.

Bucyrus-Erie's outstanding design balance ties in the dig-swing-dump operations smoothly and efficiently. Highly responsive controls, smooth clutch action and positive, independent crowd help operators get bigger loads every pass . . . more passes every hour than ever before.

There are seven different Bucyrus-Erie models in the ⅜- to 4-yd. range of gasoline, diesel, and single-motor electric machines — each with size and strength throughout to match its rated capacity. Each can be quickly converted in the field to the front end that produces the best job efficiency. And simple, clean design makes parts readily accessible, maintenance easy.

Best proof that these features bring top performance is out in the field. For instance, yardage-wise owners have bought more 10-B's than any other ⅜-yd. excavator . . . more Bucyrus-Eries for rock than any other make. The *record* shows that with owners, operators and maintenance men alike, Bucyrus-Erie is the one line that's

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Most Compared

Most Preferred

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

Have you seen the important

NEW FEATURES

on the WHITE Engineers' transit

YES, the White Engineers' Transit is a fine engineer's instrument — now made even finer with the addition of *covered leveling screws* and *coated optics*.

Covered leveling screws assure you of smooth, easy, precise leveling at all times, under all kinds of conditions for the life of the instrument itself.

Coated optics guarantee clear, sharp, accurate images — without halation, at longer distances, even under adverse conditions.

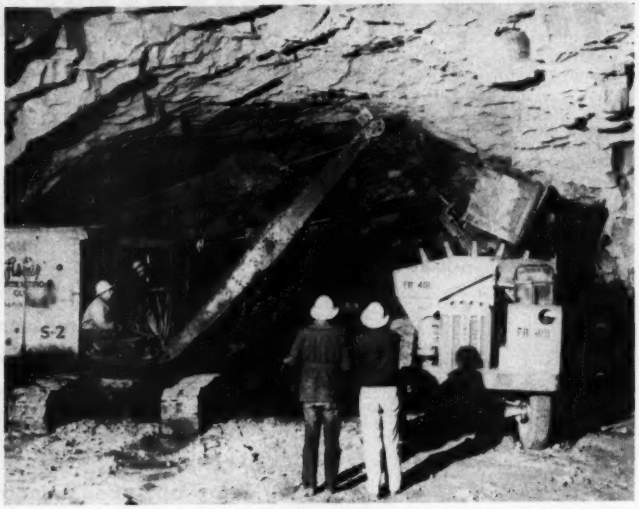
Compare the David White Engineers' Transit with all others — feature for feature — price for price. Compare them for accuracy — long durability — built-in quality. To meet your preference, this instrument is available with "U" or "A" type standards. You'll find you'll buy right when you buy a David White.

Contact our nearest dealer for complete details of the David White Engineers' Transit and for other fine Engineering Instruments — or write direct to David White, 343 W. Court Street, Milwaukee, Wisconsin.

DAVID WHITE COMPANY

We offer complete, prompt repair service on all makes of instruments — levels, transits, theodolites, etc.

HARDROCK HIGHWAY JOB . . . Continued



AT TUNNEL FACE, on day shift, Lorain shovel loads out 300 cu yd of muck drilled and blasted on night shift. Koehring Dumptors dispose of spoil in highway fill outside.

IN HIGHWAY CUT on approach to tunnel, Caterpillar D8 with U-shaped bulldozer shakes down loose rock from cliff after blasting. Spoil will be kicked into gully alongside.

(Continued from page 87)

two-deck scaffold that carries ten drifters on columns and bars. Drilling and shooting are done at night, mucking during the day, for a 10- to 12-ft average advance. A 1-yd Lorain shovel loads the 300 cu yd of blasted rock per shot into 6-yd Dumptors for disposal in a highway approach fill at the portal.

The ½-mi grading job leading to the tunnel is being punched through a spectacular jumble of deep gullies and towering bluffs up to 125 ft high. Here, 170,000 cu yd of rock are being moved by blasting the fingers projecting into the main canyon and knocking them into the gullies for fill.

To drill high on the face of the cliffs, Fisher designed a lightweight platform mounted at the tip of a wheel-mounted Lima crane's 70-ft boom. It is automatically leveled at any boom angle by cables running from outriggers at the rear of the platform, then around sheaves part way down the boom, and finally to an auxiliary gantry on the crane. The platform carries a drifter on a bar spanning the deck, and is equipped with floodlights for night drilling. An accompanying truck-mounted compressor supplies air; a generator on the back of the crane supplies electricity. Access to the platform is by ladder on the crane boom.

The hardrock highway is being built by Fisher Contracting Co., Phoenix, for whom Ray Spangler is project superintendent. Ed Metz is drill foreman, and Bob Meyer is in charge of excavation.

How to Raise Money

TO BOLSTER the group's treasury, the Excavating and Grading Contractors Association of Los Angeles recently worked out an interesting fund-raising scheme—they took on a group grading job and turned the proceeds over to their treasury. They believe in pooling both ideas and equipment to further their objectives.

The project undertaken was in connection with the new Culver City Memorial Hospital. One of the members was awarded the clearing subcontract, and he then turned it over to the association. All members chipped in equipment—tractors, draglines, hoes, trucks and scrapers—and the 5,000 yd of dirt and 100 loads of rubbish were moved in only one day to complete the contract.

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With the increasing shortages of strategic materials, new chain saws will become harder to get. Certain parts may be hard to get . . . or you may have to wait a long time for delivery. At the same time, there will be an increasing demand for chain saws. Forest products will be needed more than ever and the industrial use of chain saws will increase by leaps and bounds.

Now is the time to take care of the chain saw you have . . . and Disston is going to help you do it.

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Disston dealers are cooperating in this program. Their strategically located shops are completely at your service. Take your saw in for a check-up now. These experts can spot little troubles before they become big and expensive troubles.

FOLLOW DISSTON'S PREVENTIVE MAINTENANCE PROGRAM

TAKE YOUR SAW TO YOUR DISSTON DEALER FOR A PERIODIC CHECK-UP

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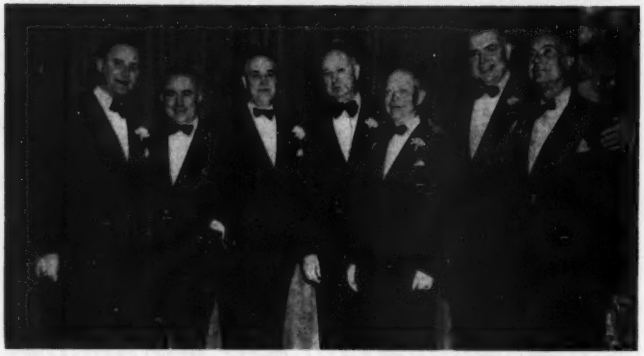
Moles Give Awards to Corey and Spooner



FEATURED MOLES AND GUESTS at 1951 Award Dinner are: George F. Ferris, who gave Award to Lester S. Corey; John S. Macdonald, chairman of Moles Award Committee; Ray N. Spooner, Member Award winner; James A. Farley, who was made an honorary member; Mr. Corey; J. F. Salmon, Moles president; E. A. Prentis, who presented Spooner's Award.

TOP MEN in the construction industry packed The Moles' Eleventh Annual Award Dinner in New York, Jan. 31, to join in honoring Lester S. Corey and Ray N. Spooner for "outstanding achievement in construction." The association of leaders in heavy construction also presented honorary membership to James A. Farley, president of General Builders Supply Corp. and former postmaster general.

Mr. Corey, president of Utah Construction Co., San Francisco, was recipient of the non-member award. He was honored as "Pioneer, citizen, contractor; in recognition of his high excellence as a leader and his conspicuous skill, notably in the field of dams, irrigation and railroad construction." In accepting his award, Mr. Corey spoke for the entire construction industry when he said, "I think Americans can take pride in their accomplishments in our field. We have developed the ablest engineers and contractors and have invented the best equipment in any country. I think American construction people have the utmost courage. They will design and build anything the progress of civilization calls for, and risk their reputations and their money doing so. We are in a grand game."

Mr. Spooner, of New York's Allen N. Spooner & Son, Inc., was winner of the society's member award, "in recognition of his superlative and effective service and his eminent accomplishments, notably in the fields of waterfront, pier and harbor construction.

three smart mason contractors

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Mason frames illustrated at right can be used with side-wall brackets, or with planking inside the frame.

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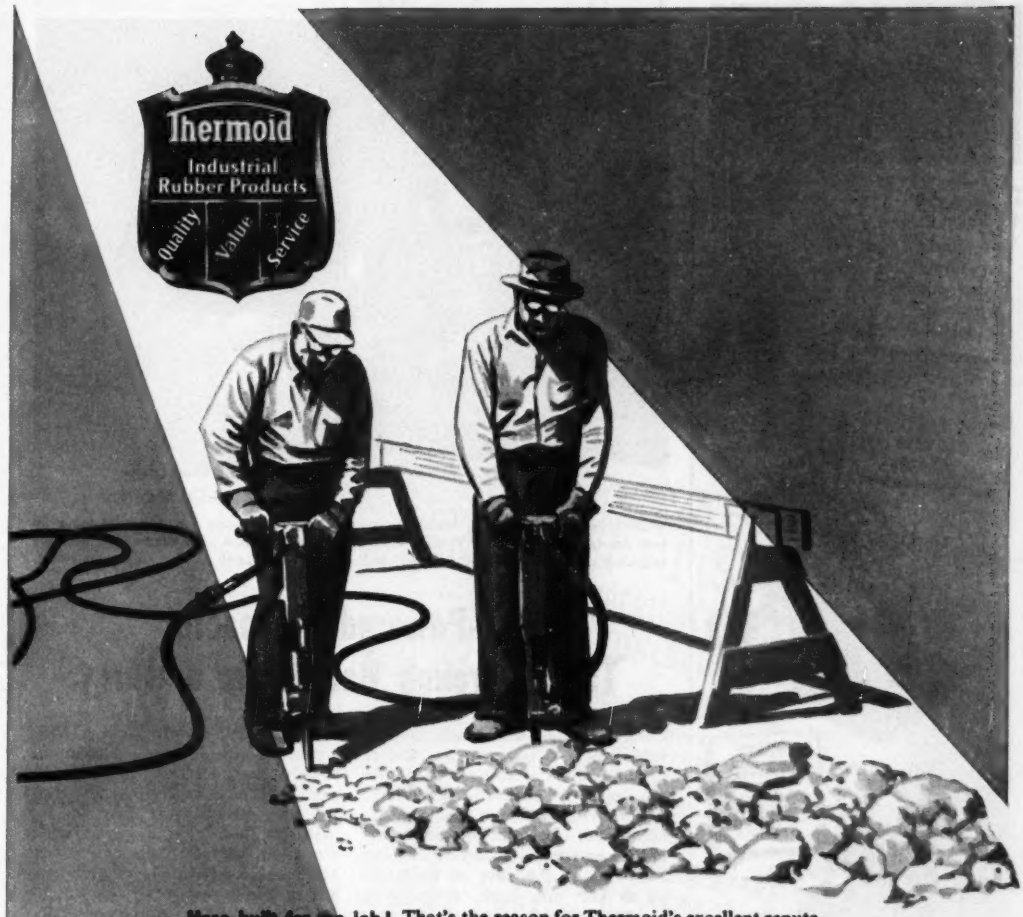

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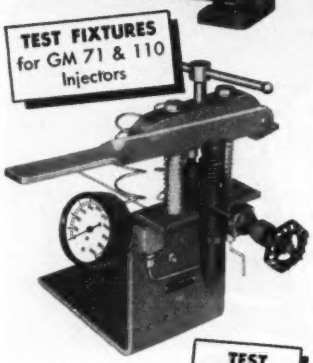
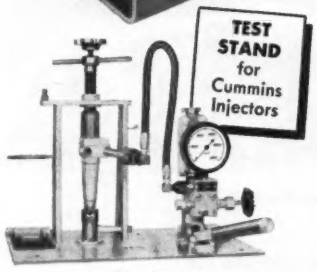
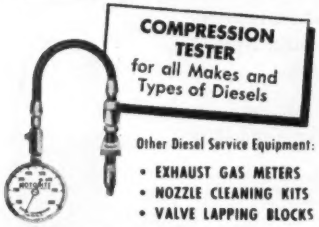
Essential DIESEL TUNING TOOLS







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WORKING ITS WAY along trench, tamping machine compacts 4-in. layers of loose fill over drainage pipe on West Virginia highway project. Two such units handle work normally requiring six pneumatic hand tampers, and also compact earth in highway center island.

Self-Powered Compactor Tamps Trench Backfill in a Hurry

COMPACTION of trench backfill took a new twist recently—use of gasoline-driven tampers originally developed for asphaltic pavements. On one West Virginia job, the self-contained, one-man-operated machines worked 4-in. layers of loose material at the rate of 45 to 60 sq ft per min each, compacting to 90-95% of standard Proctor density.

The project was reconstruction as a dual highway of a stretch of U. S. Route 60 near Huntington. Included were more than 2 mi of 18- and 24-in. reinforced concrete main trunk sewers with 18-in. laterals, and 6 mi of perforated sub-drains. It was to embed these properly that the general contractor, W. H. Ringwald & Sons Inc., of Chillicothe, Ohio, tried out the tampers—two Wayer Impactors.

The Impactor is a wheel-mounted machine with an 8x25-in. tamping plate (heated by engine exhaust for black-top work). The plate strikes 1,900 blows per min, and each blow's impact is approximately 1,250 ft-lb. Action of the tamping plate gives the machine a self-propelling motion, but it will not advance until loose material under it has been solidly compacted.

Soil at the highway site averaged 32% silt and 42% clay, 100% passing a No 10 screen. Maximum density varied from 101 to 109 lb per cu ft. Through this, trenches for the drains were dug 45 in. wide for 18-in. pipe and 52 in. wide for 24-in. pipe. Depth was made sufficient for 3 to 4½ ft of backfill in the trench over the top of pipe. After excavating, trench bottoms were tamped by Impactor, and pipe was placed. Then backfill around the sides and to the top of pipe was compacted with standard pneumatic hand tampers.

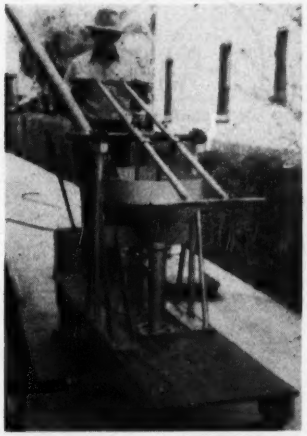
From this point, two Impactor machines handled the tamping of all backfill to grade wherever specification called for 4-in. lifts and 90-95% standard Proctor density. Fill was kicked into the trench by bulldozer and spread by hand, the same as would have been done ahead of pneumatic tampers. No additional care or preparation was necessary. Working along the trench, the Impactors reached the required density in no more than two passes.

Maximum production per Impactor was 600 lin ft of trench filled and tamped per 8-hr day; minimum was 200. Average production per machine was 300 ft of trench with 4-ft filled depth. Den-

sities achieved ranged from 90 to 103% of maximum.

The contractor estimates that six men handling pneumatic hand tampers would have been required for backfilling above pipe level had this method been used throughout. With the Impactors, the tamping crew was cut to two men, compressors and their operating engineers were eliminated, greater footage of trench was completed daily. And Ringwald's superintendent, R. N. Cutright, is convinced that 8-in. lifts could have been compacted to required density with still further savings in time and cost, had not specifications called expressly for 4-in. lifts. Operators were paid the union wage scale for air tampers, but common labor could have run the Wayer Impactors easily.

A Handy Grouter



TO PATCH concrete tunnel roofs, Fred Conklin, construction foreman for a California utility, developed this hand-operated grout pump. It saves setting up a compressor and stringing air lines, eliminates danger from electric shock or monoxide, and has proved handy for making small patches deep inside tunnels and for filling hollow block walls.

The simple rig has two cylinders (3-in. bore and 8-in. stroke) that can pump a 1:3 mix through a 1½-in. hose to a height of 35 ft at the rate of 3 yd per hr. When fitted with a 1½-hp gas engine, capacity is upped to 4 yd. The machine's valves are simple and automatic, and there is no metal-to-metal contact between piston and cylinder liner so wear on these replaceable parts is light.

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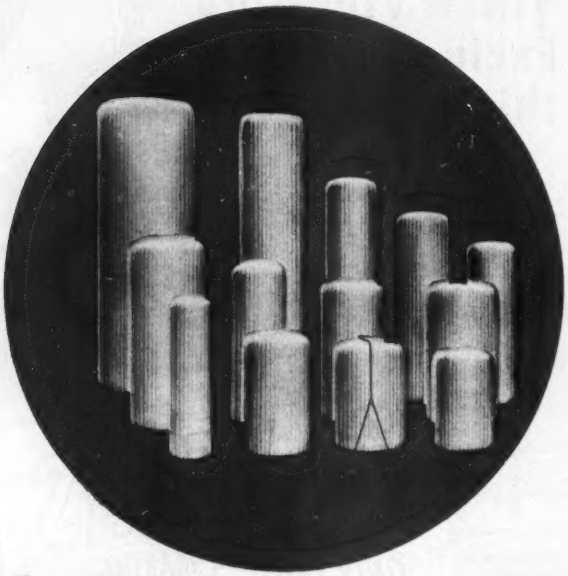

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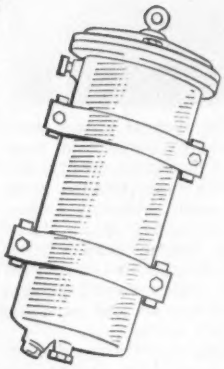
More and more, as the national emergency makes it imperative that you protect your engines against the danger of being unable to replace or repair them, your maintenance program must provide for dependable filtration of fuels and lubricants. The urgency of your need makes it doubly worth your while to remember that Winslow manufactures over 200 sizes and shapes of fine elements. There's a Winslow Element for any make or model of filter that you may own!



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WINSLOW FILTERS

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AED Elects Arnold President

R. L. ARNOLD, Salt Lake City, was elected president of the Associated Equipment Distributors at their recent 32nd annual meeting in Chicago. He succeeds C. F. Halliday of Sioux Falls.

Other officers elected were: H. J. Hush, New York, executive vice-president; J. A. Benson, Houston, S. J. Oechsle, Philadelphia, and S. A. Stephens, Jr., Montreal, vice-presidents; and E. J. Crosby, Boston, treasurer. P. D. Hermann is executive secretary of AED.

Pritchard Heads Constructors Group

J. F. PRITCHARD, Kansas City, has been elected president of the National Constructors Association, an organization of engineers and builders of chemical plants, refineries and steel mills. J. J. O'Donnell, New York, is vice-president; C. B. Bronson is secretary-treasurer in New York.

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HARD-FACING ALLOYS BY VICTOR

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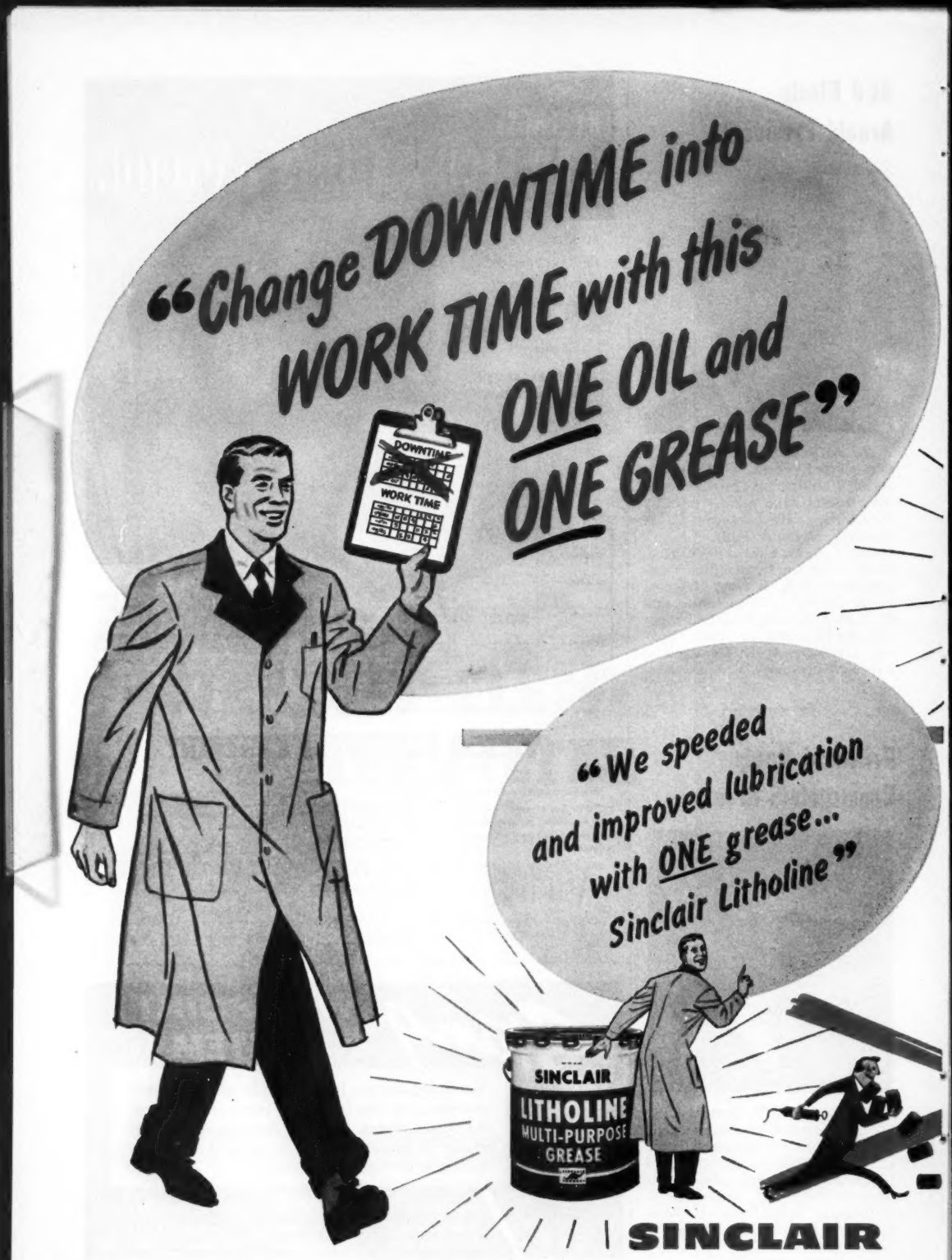
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"We speeded and improved lubrication with ONE grease... Sinclair Litholine"
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You can keep your diesel-powered or gasoline equipment going longer between overhauls in severe duty service by using ONE oil — Sinclair SUPER TENOL. In fact, operators report that under tough operating conditions — high temperature, high speed, over-load... or low temperature, light load, long idle, stop-and-go — they have *more than doubled the life of their equipment* between overhauls with versatile SUPER TENOL.

Consider how you can cut downtime and grease inventories by using ONE single grease for the complete lubrication job. Sinclair Litholine provides better lubrication than long-established specialized greases. And that means for *all* lubrication points — chassis, wheel bearings, water pumps, universal joints — in winter or summer, under all kinds of operating conditions. Litholine gives you —

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8. Less wastage.

Sinclair will gladly send you a folder describing demonstrations showing the superiority of Litholine over other greases.

SUPER TENOL AND LITHOLINE

THE MAINTENANCE SHOP

A monthly equipment service and repair feature

Guide Your Preventive Maintenance With a Master Service Manual

BY HOMER C. CAMPBELL
Service Manager
H. W. Moore Equipment Co., Denver, Colo.

LAST MONTH we warned that preventive maintenance is serious business—a business that requires hard work and cooperation of the entire organization. There can be no half-way point in a complete equipment maintenance program.

You must build up a file of information on all your equipment. You must catalog your machines so that each piece and its attachments may be identified by number or symbol. And to operate and

care for them properly, the Master Service Manual outlined last month should be enlarged upon for the benefit of your entire organization. A great deal of information must be carried in this manual, for it is more of an educational than mechanical nature.

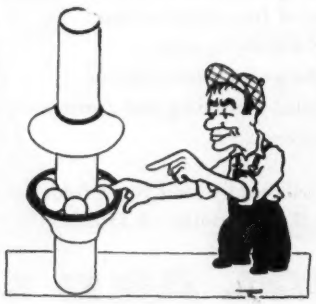
For instance: During the last five years, great advancements have been made in metallurgical details on equipment, and a great many in lubricants. But metallurgical changes can affect lubricants to a greater extent than many realize. We have recently found that heavy duty oils used in high speed diesel engines are not too satisfactory for break in oils. In many cases these inhibited and detergent type oils deter the breaking in of piston rings. This results in excessive consumption of crankcase oil, and in many cases it has become necessary to re-ring or hone out cylinder liners to get a ring job to "take hold" and go to work as it should. These are lubrication details, rather than mechanical, and such information should be in the hands of all involved with equipment. Therefore, it is imperative that all data on lubricants be gathered and be incorporated in the manual.

You can get a tremendous amount of help from oil companies and equipment manufacturers. Many will be biased in the matter of lubricants, and it is again necessary to use a lot of common sense and take a good cross-section of the answers given. While the main thing about oil is to keep it clean, there is a lot to be known about lubricants. Your organization needs to know it, so make this section an important one.

Your fuel section need not be as large as the lube section, but should be frank and thorough.

Cooling systems on modern engines need attention more than in the past. A section should be devoted to this in conjunction with mechanical maintenance. We mention this here for the reason that more and more difficulties are arising from cooling systems.

The matter of handling, installing and servicing of plain, ball and roller bearings is of great importance, and should have a great deal of information in the manual under a suitable heading. For many years we have listened to wailing about replacement parts not standing up as well as the original. We only get what we pay for—put in inferior parts and get inferior service. However, in the case of bearings, failure of the replacements is often due to ignorance of the proper installation procedure and to carelessness in handling.



Again, contact your equipment or bearing manufacturer for help. Consolidate this information in the manual with suitable pictures and your entire organization will have the answers necessary for good bearing service.

(ED. NOTE: The Anti-Friction Bearing Distributors Assn. has evidently anticipated Mr. Campbell's recommendations—just last month they issued their first "Bearing Maintenance Report." This is part of a continuing study of successful bearing maintenance, installation and removal procedures, which is being issued in pamphlets for free distribution. As far as is known, this is the first attempt to publish in permanent form all available maintenance information on every type of bearing. For free copies, and binders for future issues, write AFBDA, 1900 Euclid Ave., Cleveland 15, Ohio.)

A section on welding equipment

and its use is of vital importance. Properly used, acetylene welding and cutting equipment can save a great deal of expense to the job. Many serious accidents are the result of lack of knowledge in handling gas and electric welding equipment. Many welds are made

with improper rod. Much time and materials are wasted due to lack of complete information. Do not attempt to make this section up for beginners. There is plenty of data that the old hands can use, which will be more profitable. Incidentally, this section, if adhered to, will probably effect sufficient savings over a period of time to finance your manual expense.

A section on cable is essential, for abuse causes more cable replacement than does use. Your cable supplier can give you information as well as illustrations.

High-speed equipment rolling on rubber is coming to the front, and fast. Therefore, a detailed section on tires is a must. Tires, like cable, take a lot of abuse along with a normal amount of use. Build this section up and keep it current, for changes come fast.

Fire is one of our greatest domestic enemies, and a great deal can be done about it. The organization must be made fire-minded and given some uniform instructions on how to handle the situation. They must be taught how to handle available fire extinguishers. Devote a section to this important matter. Accident prevention starts with "A", so should be put at the head of the index. It is of vital importance. Accidents do cost money, and in many ways. Many sources are available for information on this subject: Insurance companies, contractors organizations, National Safety Council and many others. Utilize their services and help prevent accidents. It will help increase your profits.

MOVES equipment *faster* . .
SAVES man hours *doing it!*

Model "B" 10 ton
Only $1175

The following equipment is optional and extra. Hydraulic tilt control, two speed winch, electric brakes.

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MILLER Tilt-Top trailers give extra mobility to every piece of equipment—provide the closest thing to using one piece of equipment in two places at once. Really saves on man hours. Loading is so simple—one man can handle it. Self powered equipment is simply driven on or off tilted platform—and dead equipment is pulled on with optional hand operated winch.

All steel, X braced frame has tapered side channels and integral straight through axle. Standard platform is 14'x8'. optional 16' available. Platform, tires, Timken bearings, pintle eye and dual Budd wheels are all standard equipment.

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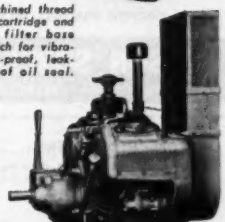
The new MICRO-FINE OIL FILTER CARTRIDGE removes solids that measure less than 1/10,000th of an inch in diameter . . . and will hold its own dry weight of acids, dirt and filings! And it costs no more, and possibly even less than Oil Filters you have been using!

Replace Filter Cartridge after every 50 to 100 hrs. of engine service (depending on dust conditions) for the best engine protection. Ask your Wisconsin dealer for the new MICRO-FINE Oil Filter Cartridge.

Machined thread of cartridge and oil filter base match for vibration-proof, leak-proof oil seal.



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The GILSON Testing Screen is designed for the efficient sizing of test samples of sand, gravel, stone, slag and similar materials. It accommodates samples up to one cubic foot, making from two to seven separations simultaneously, in five minutes or less.

The screen trays and dust pan are sturdily built to withstand rough usage—will not bend or warp. All trays and pan are balanced to the same tare weight—it is not necessary to transfer samples before weighing. Machine handles coarse or fines from 4" to 200-mesh.

Eliminate guesswork and avoid errors—get the facts—reduce operating delays—cut costs—and meet specifications with a GILSON Mechanical Testing Screen.

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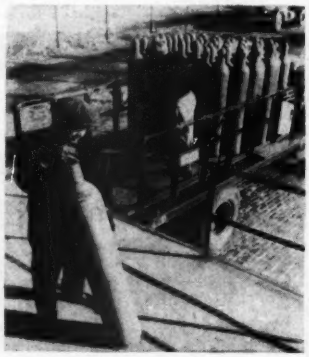
How to Handle Oxygen Cylinders Safely

TO PREVENT ACCIDENTS in handling oxygen cylinders, only a few common-sense precautions are necessary. But these safety rules are so simple that many have forgotten them or feel they may be ignored without consequence. Not so! Too many men become accident statistics through carelessness and improper handling of cylinders. To keep yourself safe and whole, follow these recommendations of Linde Air Products Co.

Use Safe Transport Devices

If necessary to convey oxygen cylinders over a considerable distance, use a cylinder truck with a chain or steadying device that will prevent them from being knocked over. Use a cradle, boat, or platform for transporting cylinders by crane or derrick. Never use slings or an electric magnet.



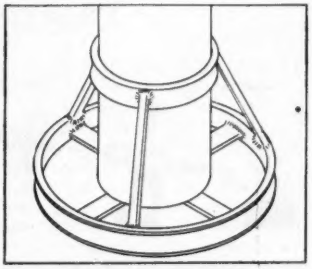
Tilt and Roll Cylinders

Roll Them—Don't Wrestle

Don't try to wrestle and hug a cylinder — it can be tilted and rolled on its bottom edge with considerable ease (photo). Avoid dragging or sliding, which not only is bad practice but requires a lot of needless effort as well. Once you get the idea of rolling cylinders, you can handle them with ease, safety, and speed.

Check Those Caps

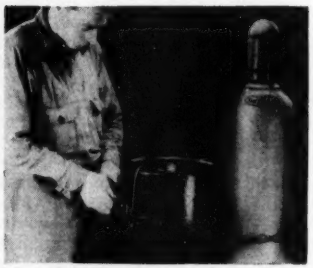
Valve-protection caps are designed to protect valves from damage. When oxygen cylinders leave the charging plant or warehouse, caps are properly in place and hand-tight. Once the cylinders have been used, however, carelessness in replacing caps accounts for many mishaps in handling. The obvious remedy is to consider every cap a loose one until proved otherwise.



Make Stand From Wheel Rim

Before moving a cylinder, check the caps. See that the cap is on straight, and try to turn it in a clockwise direction until you are sure that it is hand-tight. Then, if the cylinder is in a horizontal position, raise it to vertical by grasping the cap, and roll it clockwise on its bottom edge to where you want it. Valve-protection caps should never be used for lifting cylinders from one vertical position to another.

Whether an oxygen cylinder is empty or full, it should never be moved unless the cylinder valve is closed and the cap is properly in place. It takes only a second to check a cap, and that second is a sound investment that can prevent an accident.



Chain Cylinders Together

Keep Them Upright

Transport, store and use cylin-

(Continued on page 105)

TAKES HEAVY IMPACT

LIKE A POOL TAKES A PEBBLE

Homocord CONVEYOR BELT

"We seldom see a cut or gouge in Homocord Conveyor Belts. And they consistently outlast other belts on heavy-duty installations."

There are engineering reasons for this typical user report. The extra body-cushion built into Homocbrd dissipates the shock of sharp impact from large lumps of coal, ore and rock . . . assures long life. Natural troughing and flexibility add up to more ton-miles of materials carried.

Full description of these and other advantages are described in Bulletin 6906. Let us send you a copy. You get the same long-life engineering in R/M hose, V-belts and flat belting. Ask your R/M representative.

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Manufacturers of Mechanical Rubber Products • Rubber Covered Equipment • Radiator Hose • Fan Belts • Brake Linings • Brake Blocks • Clutch Facings • Packings • Asbestos Textiles • Powdered Metal Products • Abrasive and Diamond Wheels • Bowling Balls

You move...

more dirt . . . faster

when you "grease on the go" with

ALEMITE

portable service stations

You Save Time by bringing complete power lubrication to trucks, tractors, equipment right on the job! Air-operated pumps deliver grease "refinery clean" direct-from-barrel-to-bearing.

You Save Money by cutting the costly "downtime" required for lubrication, thereby increasing the output of *both* your men and equipment.

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Alemite Pumps. Air-operated for delivering engine oil, chassis grease, and gear oil from original drums. Available for individual or "group" installation.

Alemite Hose Reels. For high and low-pressure delivery of chassis grease, gear oil, engine oil, air and water. Available in single or multiple units to suit any requirement.

Add 'em . . . group 'em into just the rig you want
Alemite Units are S-E-C-T-I-O-N-A-L-I-Z-E-D!

Yes, whatever selection of chassis or gear oil pumps and reels you require for 100 lb. drums, you can easily combine them into a tailor-made Alemite Portable Service Station—*exactly keyed to your needs!*

Other Alemite heavy duty pumps, reels and accessories are also available for 400 lb. and 54 gal. capacity drums.

SEND TODAY for FREE illustrated catalog describing this equipment. Write to Alemite, Dept. F-31, 1850 Diversey Parkway, Chicago 14, Illinois.

ALEMITE

Another Product of
STEWART WARNER

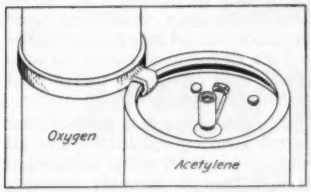
(Continued from page 102)

ders only in an upright position, and prevent them from being knocked over or damaged by passing or falling objects. Provide an approved cylinder truck for cylinders in use. Otherwise chain them to a building column or anchor them by a chain fastened to a wall with lag bolts. If no supporting member is handy, set up your cylinders on the most level spot available, where sparks, hot slag, or flame will not reach them, and give them increased stability by chaining or clamping them together, or by means of a steadying device.

Don't Tamper With Cylinders

If cylinder valves cannot be opened by hand, notify the supplier. Do not use a hammer or wrench. If you receive a cylinder in a damaged condition, make no attempt to repair it. Set it to one side where it cannot be used by someone else and tag it to report the fact that it was received in damaged condition. Then immediately report the character of the trouble to the supplier, giving the serial number stamped on the cylinder, and follow his instructions as to its prompt return.

It might seem unnecessary to advise against attempting to repair



Hold Them With Ring Clamp

the neck rings of oxygen cylinders by any means, and particularly by welding, but operators have tried it and become the subjects of accident reports. Don't use cylinders as rollers or supports even if they are considered empty.

Keep Oil and Grease Away

Do not handle oxygen cylinders with oily hands or gloves. Although the chances of cylinder slippage in greasy hands is high, more important still is the fact that oil or grease may ignite violently if subjected to oxygen under pressure. Oily and greasy substances must be kept away. Do not handle oxygen cylinders on the same platform with oil, and never place them

MICHIGAN TRUCK EXCAVATOR...

rated "TOPS"

by City of Birmingham, Michigan

"Thirteen years is a lot for a machine, and we beat it badly. It was a good old machine." That's what Marx Fall, Superintendent Department of Public Works, said about the MICHIGAN ⅜ yd. truck hoe owned by the city for thirteen years.

The City of Birmingham now operates a new MICHIGAN S-4 ½ yd. truck hoe which works 48 hours a week trenching for water and sewer connections, much of the time in blue clay. Operator Tom Griffin said: "It operates easily and against other ½ yd. machines our MICHIGAN ditches faster. It's easier to drive, too."

Mr. Fall added: "We need the rubber tired mobility and the truck speed of the MICHIGAN. Its short wheel base is particularly good for our work."

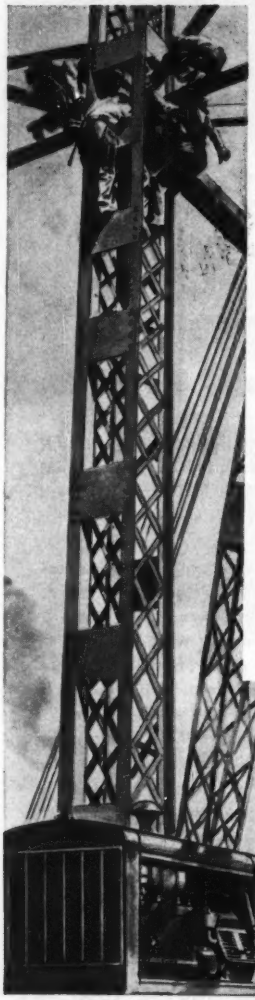
MICHIGAN POWER SHOVEL COMPANY

495 Second Street, Benton Harbor, Michigan, U. S. A.

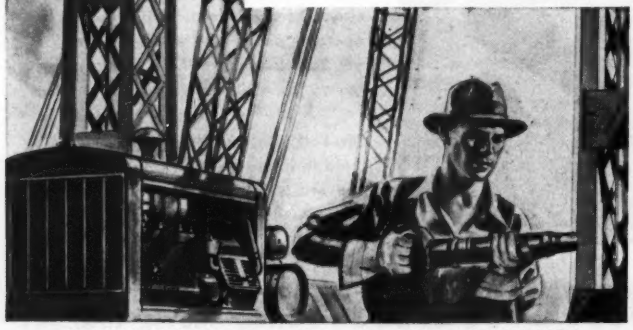
YOURS FOR EARLY FULFILMENT ...CONTINENTAL

CONTINENTAL MOTORS · Powerful as the Nation · AMERICA'S STANDARD

RED SEAL POWER



There are enough uncertainties in the way of on-time completion without any needless gambling on factors you can control. You can't have your weather made to order, nor insure your materials deliveries—but you CAN minimize the grief from these and other causes, by making doubly sure your mechanical equipment is right. You'll find Continental Red Seal engines powering leading makes of construction equipment—mixers, shovels, rollers, compressors, pumps, generating sets, winches, hoists, trucks and tractors for highway and off-highway use, and many other specialized machines. And the unusually wide interchangeability of parts from model to model makes it especially wise, in times like the present, to standardize on equipment with Continental Red Seal power.



FACTORY-AUTHORIZED SERVICE AND GENUINE CONTINENTAL RED SEAL PARTS AVAILABLE FROM COAST TO COAST

Continental Motors Corporation
MUSKEGON, MICHIGAN

in a position where oil or grease is likely to fall upon them from overhead cranes or belts.

Oxygen Is Not Air

Oxygen itself will not burn, but it supports and accelerates combustion, and thus will cause oil and other combustible materials to burn with great intensity. Oxygen should never be called air. Always call oxygen by its proper name—oxygen. Once this habit is acquired, you won't make the mistake of using oxygen as a substitute for compressed air and you will avoid the serious accidents that might otherwise result. Never attempt to use oxygen in pneumatic tools, in oil preheating burners, to start internal combustion engines, to blow out pipelines, to "dust" clothing or work, to create pressure, or for ventilation.

Don't Neglect Engine Air Cleaners

IT'S NO SECRET that dust is not good for engines and there is a lot of dust in the air. Even under ideal laboratory conditions, dust particles can get into engines without air cleaners, so figure out how much dust can enter under field operating conditions.

The dust hazard is proportional to the working conditions, but all engines in construction equipment should have air cleaners. Running an engine without one is as bad as a man sandblasting without a mask.

In an engine, dust particles enter the intake manifold, go into the combustion chamber, lodge on top of the pistons, and eventually work their way down to score the cylinder or liner walls.

Particles can go all the way through the engine to the oil pan. They can then be pumped through the lube oil system to work an abrasive action on all moving parts —eventually causing serious wear and damage to the engine.

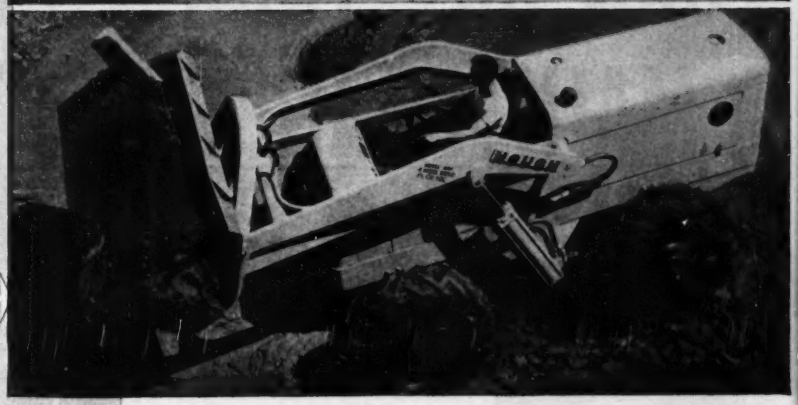
And don't neglect the air cleaner once it's installed. Depending on operating conditions, it should be cleaned frequently. Experience will tell how often. But you can't go wrong by giving your air cleaner regular, careful maintenance.

ON PAVEMENT

Model HF
¾ yd. PAYLOADER

IN PITS

Model HM
4-wheel-drive
1½ yd. PAYLOADER



PAYLOADERS

PAY OFF ANY PLACE

CATALOG and complete facts about any size PAYLOADER are available without obligation: the big 4-wheel drive 1½ yd. Model HM; the 1¼ yd. HY; the ¾ yd. HF; the ½ yd. HE; the 12 cu. ft HA.

PAYLOADERS work where you want them to work — on pavement, in sand, gravel or stone pits, in yards, or on any earth-moving job off the road, because they have tremendous traction and flotation on big pneumatic tires, plus proper weight distribution.

ALL PAYLOADERS have full-reversing transmissions with several speeds both forward *and* reverse. ALL PAYLOADERS have operator location high and forward for full visibility . . . have complete fingertip hydraulic control of lifting, lowering, bucket-dump and bucket-close.

In PAYLOADERS you are assured of the best in tractor-shovels — complete unit-design tractors *and* shovels built by the world's largest tractor-shovel manufacturer, with a world-wide service organization to keep your jobs going. THE FRANK G. HOUGH CO., 706 Sunnyside Avenue, Libertyville, Illinois.

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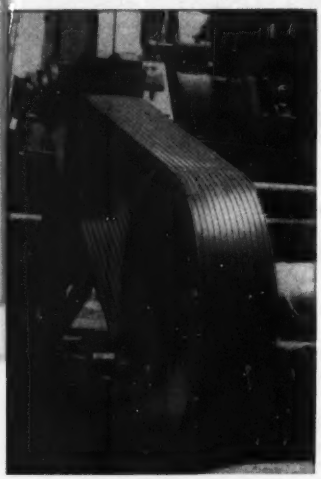
THE FRANK G. HOUGH CO. . . . SINCE 1920

BWH

DEPENDABLE RUGGEDNESS

This 73 Years of "Majoring" in Mechanical Rubber Goods

CAN CUT YOUR V-BELT MAINTENANCE COSTS



Back of the 4 big construction reasons why Bull Dog V-Belts give you maximum dollar's worth for your V-Belt money in longer service life, less slippage and headache-free operation, you'll find a history of 73 years of BWH leadership and specialization in industrial rubber goods. Constant research by BWH technologists has produced the following noteworthy "firsts" for the rubber industry: circular woven fire hose . . . the alkali method of rubber reclaiming . . . the oxygen bomb for pretesting rubber goods . . . continuous vulcanization . . . air separation of rubber from cotton in cured rubber scrap.

The BWH know-how that produced these contributions brings you V-Belts with:—

1. Specially Engineered BWH Cord Section for high tensile strength. This provides superior load carrying capacity plus ability to absorb shock loads.
2. Minimum Stretch — due to a new and exclusive technique in processing Bull Dog Cords. This assures less slippage, fewer adjustments, longer belt life.
3. Durable Covers — closely woven, heavy, bias-cut fabric takes the severe wearing action where the belt contacts the sheave — seals belt against penetration of dirt, grease, moisture.
4. Ability to Take Punishing Flexing. BWH quality-controlled compounds run cooler and do not crack or deteriorate under severe flexing.

For these reasons it will pay *you* to put a set of Bull Dog V-Belts to work and see for yourself how they pay off. Your BWH distributor can supply you.

TOUGH PROBLEMS INVITED—Don't hesitate to ask us or your nearest BWH distributor about your transmission belting, conveyor belting and hose problems. We're specialists in making mechanical rubber products work *better, longer.*

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS. • P. O. BOX 1071, BOSTON 3, MASS., U. S. A.

Pipe Joints Sealed Under Water With Canvas Diapers

All Photos by Charles G. Hicks

GROUT WAS POURED by means of funnel and hose into waterproof canvas diapers which spanned joints between pipe sections on Miami's International Airport. Wires through hems in side of canvas strips prevented trench waters from washing away grout

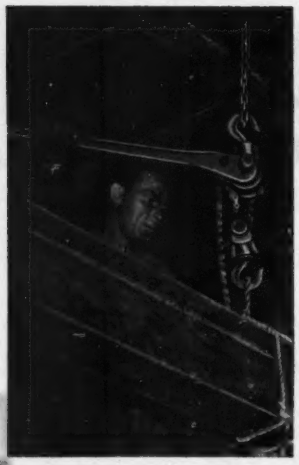
seals. Storm sewer drainage line runs 3,600 ft though 17 catch-basins to pumping station which outlets waters into Miami River. Trench averaged 7 to 8 ft below mean sea level. Water poured in, carrying silty sand which was clamshelled for each 4-ft section.

DRAINAGE was a big headache in connection with the extending and modernizing of Miami's International Airport last year. This was the problem: An easy-sloping 3,600-ft trench had to be dug and a 54-in. ID reinforced concrete storm sewer line installed. Ordinarily this would be a rather simple job, but here the average elevation is 7 to 8 ft below mean sea level —and in coral. As fast as the trench was dug out, water poured in, bringing with it a heavy deposit of fine, silty sand. Depending on the tides, water levels in the trench averaged from spring line to within 6 in. of the top all through the operations. Installation of wellpoints was impossible as well as impractical. No course was left but to figure out a way to seal the pipe joints under water.

With a permanent pumphouse installed at the lower end of the line to carry the waters into the Miami River, contractor Joe Reinertson of Miami started there

TIDES VARIED height of trench water from spring line to within 6 in. of top, necessitating underwater seal method. Stiffer mix, applied with trowels, sealed upper half of joints. Sand bags (left) prevented grout from entering pipe and washing away. Grout

hardened over night, leaving triangular-shaped seals. Starting at pumping station, contractor worked backward in 50-ft jumps, temporarily bricking upstream face of each catch-basin and using flock of pumps to keep waters moving through new line to pumphouse.



eConomy

WHEREVER YOU HANG YOUR HOIST

with

COFFING Safety-Pulls

To save unnecessary labor, to protect men and equipment is sound economy. That's why wise foremen specify Coffing Safety-Pull Ratchet Lever Hoists. Whether for raising and holding beams (as shown), repairing heavy machinery, stretching guard cables, or any of countless other jobs, these powerful tools provide tireless lifting, holding, pulling *wherever used*—letting one man replace a crew.

Special ratchet and pawl cannot slip, yet chain is free-wheeling when not under load. Nine sizes to fit every requirement. Capacities from ¾ to 15 tons—all factory tested at 100 percent overload. Find out how Coffing Safety-Pulls can bring added economy to both shop and field operations. Write for Bulletin D3SP.

Quik-Lift Electric Hoists • Hoist-Alls • Mighty-Midget Pullers • Spur-Geared Hoists • Differential Chain Hoists • Load Binders • I-Beam Trolleys

COFFING HOIST COMPANY
Danville, Illinois

a SAFE Bet!

You're sure to win with these easy-wheeling Sterling barrows. Why? Because Sterlings are made to outlast any barrow on the market. Sterlings are engineered and built to take hard punishment over a long period of years. That's why they cost less. Get the facts. Write for Catalog No. 61.

STERLING S-19

Maximum capacity 5 cu. ft. 16 gauge tray, all-welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

Choice of wood handles or tubular steel frame . . . steel wheel or pneumatic tired wheel.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS

by building the first of seventeen catch-basins. Next he excavated 50-ft sections of trench, 11 to 12 ft wide. (These varied in depth from 6 to 14 ft.) Four-ft lengths of pipe were lowered and shimmed in place, and then came the clever plan—use of waterproof diapers.

These consisted of strips of waterproof canvas, 16 in. wide and 10 to 14 ft long. A 15-ft length of No 16 annealed wire was passed through a ½-in. hem along each side of a strip. Diapers were wrapped around pipe sections and cut on each side about a foot above the water level. Wires were tightened on top, 5 in. apart, one on each pipe so that the canvas strip bridged the joint. Water was siphoned out of the diaper and replaced with 2 (sand) to 1 (cement) grout mix through a funnel and a length of 1-in-dia air hose. A stiffer grout mix was applied with trowels above the water line. Sand bags were placed inside the pipe, above the joints, to separate water and grout. Diapers were left in place overnight, and upon removal, the triangular-shaped concrete seals were inspected for tightness.

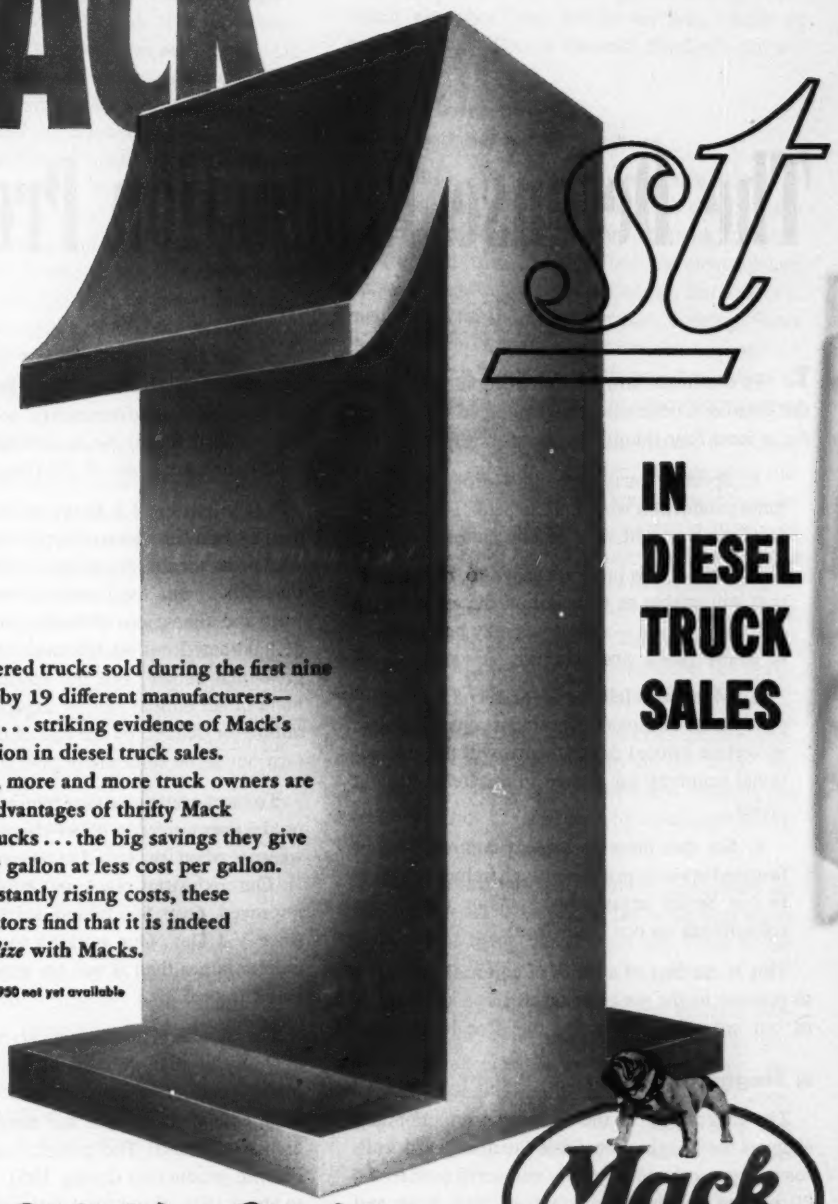
As each catch-basin was completed, its upstream end was temporarily bricked up and a flock of pumps carried the trench waters into the newly installed line on its way to the pumphouse and eventual outletting into the river. They ran on a 24-hr-a-day schedule and included: Two 8-in. Moretrench wellpoint pumps, four 6-in. Rex and two 4-in. Jaegers. In only three cases did the grout seals prove faulty, due to the wires not having been pulled tightly enough, and a second application quickly put each of these to rights.

Joe Reinertson bossed his own construction crew, and Charles G. Hicks was chief field inspector for the job engineers, Rader, Knappen, Tippetts Engineering Co., of Miami.

Job Management

A BIBLIOGRAPHY of books and articles on all phases of management of construction jobs has been published by the Engineering Societies Library, 29 W. 39 St., New York 18 (price, $2). The valuable annotated booklet lists 52 selected references, making it easy to find management literature for all types of construction, including tunnels, dams, highways, buildings and housing.

MACK



1st IN DIESEL TRUCK SALES

Of all diesel-powered trucks sold during the first nine months of 1950* by 19 different manufacturers—41% were Macks . . . striking evidence of Mack's top-ranking position in diesel truck sales.
The country over, more and more truck owners are discovering the advantages of thrifty Mack diesel-powered trucks . . . the big savings they give in more miles per gallon at less cost per gallon.
In the face of constantly rising costs, these progressive operators find that it is indeed *profit-wise to dieselize* with Macks.

*Final figures for 1950 not yet available

Be Profit-Wise...Dieselize with Mack TRUCKS

outlast them all

Mack Trucks, Empire State Building, New York 1, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; Long Island City, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

The Defense Production Problem

To win out in the struggle for freedom into which the Russian Communists have plunged us we must do at least four things. We must:

1. Speedily carry through a program of defense production which, at its peak, is scheduled to take about one-fifth of our national output.

2. Pay for this program as we go, by methods that will enable us to maintain the effort for an indefinite period – as long as may be necessary to insure peace and security.

3. Manage intelligently and endure intelligently a set of direct government controls which, in certain critical departments, will put our national economy for a time in a hateful straight jacket.

4. See that these emergency controls are not fastened upon us permanently thereby presenting to our Soviet antagonists a major victory for collectivism on our home front.

This is the first of a series of editorials designed to present in the simplest terms these key aspects of our struggle to preserve our free institutions.

A Staggering Task

The magnitude of the defense production job staggers the imagination. Over the next year it calls for a larger volume of goods and services than the 20 million people of the states of New York and New Jersey will use for all purposes. The (London) TIMES has observed that, taken alone, the increase of defense expenditures which has been budgeted for the federal government's coming fiscal year (about $30 billion) "is in itself not far short of the total national income of the United Kingdom."

Yet so powerful is the production machine created by free American enterprise that, at the scheduled peak, the defense program will take only about one-fifth of our total national output. The exact form and dimensions of the program will, of course, be hammered out on the anvil of public and congressional debate. But the President's recent estimate of an annual rate of expenditure of $45-55 billion for defense by the end of this year may well turn out to be somewhere near right.

To meet even these vast requirements of defense production we are in better shape technically than we were when we started to prepare for World War II. Our industrial plant and equipment is greatly improved. Over $65 billion has been invested in it since V-J Day. Our working force is about eight million larger than it was ten years ago and much better trained.

The difficulty, and it is a very serious economic difficulty, is that we must fit the defense program into a productive machine that has been almost fully extended to meet the needs of a booming civilian demand. The present plan is to step up defense production during 1951 from about 7% to about 18% of our total national output. Because there is relatively little slack in our economy, this means that civilian production at the outset must

be cut back as defense production is stepped up.

The cut-back of civilian goods must be especially severe in the case of products made of metal. This is particularly true of goods that use scarce strategic metals such as aluminum and copper. Of our total defense production program, about half will go for "military hardware" – airplanes, guns, munitions, tanks and the machinery to make them. By the end of 1951 defense requirements are scheduled to absorb most of the metalworking production not required for essential construction and for the spare parts necessary to keep existing equipment running. For a time at least, there will be a sharp cut in the supply of new metal products available to civilian consumers. The defense squeeze on both materials and manpower will also cut sharply into housing and other civilian construction.

For the Short Run — Controls

In the short run there is no answer to the problem of meeting defense production schedules except controls. Sharp reduction of non-defense expenditures by government is essential and would help greatly. But the basic fact is that we cannot increase our total production fast enough to meet immediately both civilian and defense requirements.

Controls are needed, therefore, to switch resources from civilian to defense production, and at the same time prevent the combined demand for critical products from sending prices right through the roof. In the case of many scarce strategic metals such as nickel, copper and cobalt, the task of increasing output is especially difficult because our limited supplies are tucked away deep in the earth in many quarters of the globe.

For the longer pull – and that is what we must face – there is another answer to our defense production problem that is infinitely better than controls. And this time, in contrast to World War II, it is all-important that we get the right answer to our defense production problem for the longer pull and that we get it right now. In World War II we geared our economy to meet the requirements of a relatively short and decisive conflict. Now our leaders, however they may differ as to methods, are well agreed that, at best, "the conditions under which we labor may persist for ten, fifteen or twenty years." That is General Bradley's phrase.

For the Long Pull — More and Better Production

For this longer pull, the constructive answer to our problem of defense production is clearly more and more efficient production all along the line. It is true that overall we now have the most efficient industrial establishment in the world. But, even so, much of it is far short of attainable efficiency. Some plants using up-to-date equipment and methods are as much as six times more efficient than others in the same industry that are lagging in modernization.

Our Director of Mobilization, Charles E. Wilson, has clearly in mind this problem of increasing our industrial efficiency. The first step in his job, as he conceives it, is to get out an adequate supply of weapons to equip the army, navy, and air forces already mobilized or in process of organization by us and our allies. The second step is to make sure of our capacity to produce both "military hardware" to meet any increased requirements and the maximum possible volume of goods for civilian use.

In concentrating on more and more efficient production, Mr. Wilson is squarely on the beam. We can attain his objective – by sustained effort on the part of each one of us backed by up-to-date industrial methods and equipment.

If we do that, we can maintain indefinitely an adequate defense effort and at the same time enjoy a standard of living higher than any other in the world.

Additional production and more efficient production are our surest safeguards against our two most menacing enemies on the home front – the deadly inflation that can destroy our free economy, and the strangling government controls that can destroy our political freedom.

McGraw-Hill Publishing Company, Inc.

PULLING A 17-YARD SCRAPER, the TD-24 moves more paydirt in a faster time cycle to keep Highum and Wondra ahead of the contract time clause on Minnesota State Aid Road Number 9, near Clinton Falls, Minnesota.

IT'S "THE CHAMP"—the big red International TD-24—and here's what R. E. Highum says about it: "The easy quick-starting engine gets our equipment working sooner each day. Over a period of time that means a lot more profit for us. Economy in fuel, lubrication, and repairs is good. International parts delivery and service are tops."

Clean, quick shave for the face of Minnesota

How one contractor closes the work-gap with the TD-24

Up in the land of ten thousand lakes, the International TD-24 is doing a job of moving paydirt that would make any contractor sit up and take notice.

Highum and Wondra, Blooming Prairie, Minnesota, on a state road improvement contract, are a hundred percent for International—and here's why:

The TD-24 on the job rolled up 1,500 hours its first year with no downtime and not a cent for repairs.

Quick, all-weather starting—with International's exclusive push-button, gasoline-conversion starting system—gets equipment working sooner each day—doubly important where the snow flies early and stays late.

TD-24 hauls a bigger payload with a shorter time cycle—does more work with more speed.

Synchromesh transmission—you shift "on-the-go."

Planet Power steering with finger-tip control for pivot turns, feathered turns, turns with power on both tracks.

Reserve engine torque control—gives more lugging ability and increased drawbar pull for overloads.

Power—TD-24 delivers 148 maximum horsepower at the drawbar.

Ask the superintendents and the "skinners" on any TD-24 job. Ask to take the controls yourself. Then let your International Industrial Distributor show you what's in the TD-24 for you. You'll be a TD-24 man from then on in.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

INTERNATIONAL CRAWLERS MAKE SNOW TRAPS—deep snow ditches to keep the highway from drifting over in winter. A TD-9 and two TD-18's are on this job. One TD-18 has 4,500 hours in three years, the other has 9,600 hours in four years!

INTERNATIONAL HARVESTER

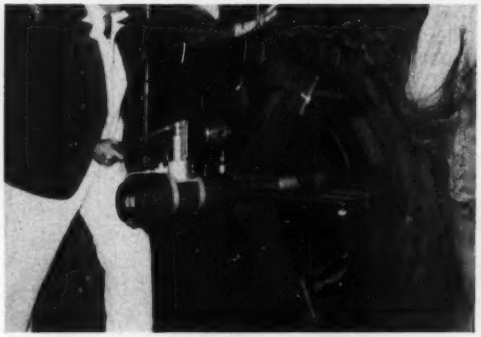
INTERNATIONAL

POWER THAT PAYS

CONSTRUCTION EQUIPMENT NEWS • • *A Preview of*

By MELVIN DEAN, Equipment Editor

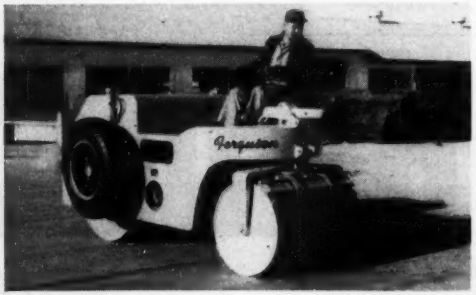
Small-Model Single-Pass Soil-Stabilizing Machine Has a Processing Width of 5 Ft



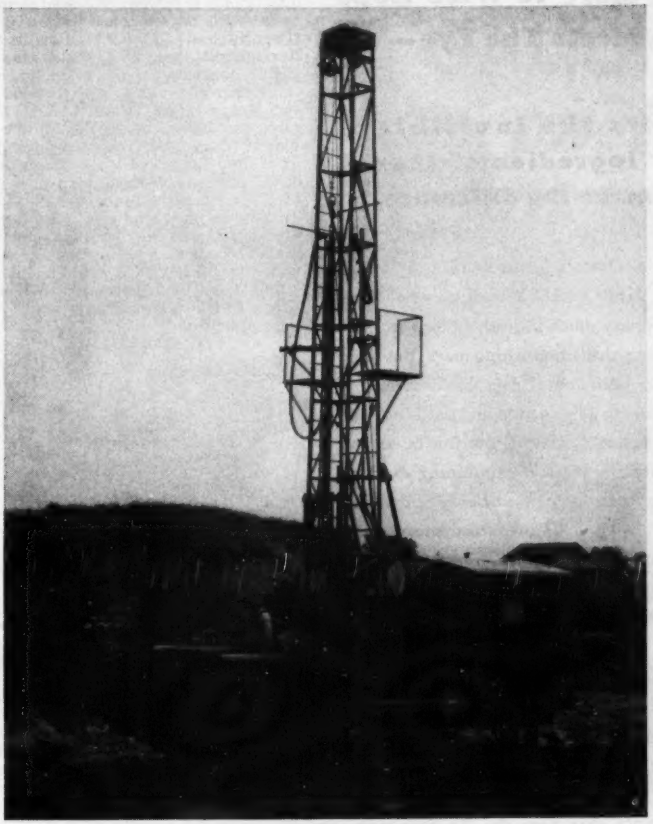
HYDRAULIC TIRE CHANGER has 18 tons of pressure exerted on it by a hand-operated hydraulic pump. Adjustable to all sizes, the Tirematic has a special dolly to permit one operator to change and remove wheels. **—Dixie Tallyho, Inc., Fairburn, Ga.**

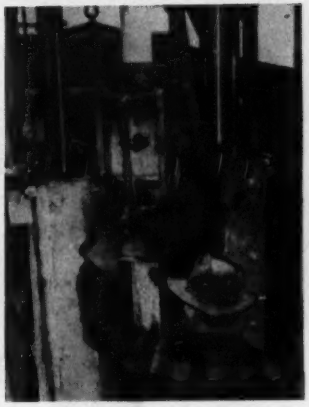
Smaller-model soil stabilizer uses the same principles of operation as the P&H large 8- and 10-ft units. It can be used for all types of stabilized base construction: soil cement, cement-treated base, various combinations of cut-back asphalt, asphalt emulsions or tar with soil, sand or aggregates, and mechanical and chemical stabilization. The P&H single pass stabilizer is self-propelled and performs all necessary operations for complete processing of in-place soils with any type admixture, leaving the materials ready for compaction. The Model EA-56 does its own digging, pulverizing, blending of admixtures, applying of liquids, and complete final mixing in a single pass, under the full control of one operator. All controls are conveniently grouped for efficient operation. Low-pressure hydraulic controls provide accurate precision at slow speeds. The EA-56 has two separate liquid systems—one for water; the other for bituminous fluids. They may be operated in unison or as individual units. All liquids used in materials processing are accurately metered, and are atomized through a specially designed spray-nozzle arrangement. Maximum working depth is 7¼ in. Digging speed ranges from 8.6 to 26.9 fpm.**—Harnischfeger Corp., 4494 W. National Ave., Milwaukee 14, Wis.**

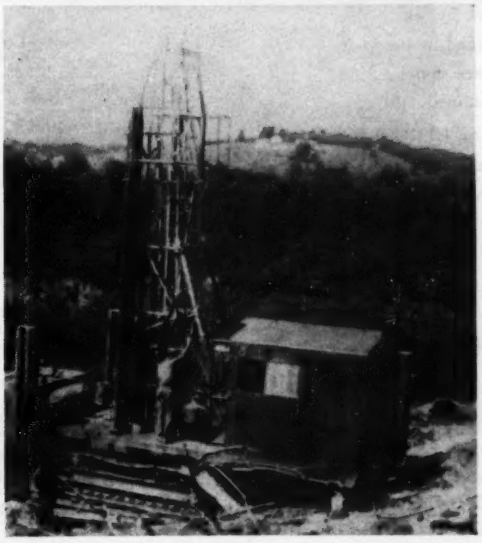
IMPROVED HYDRO-TRENCHER features a forced-ejection bucket available as optional equipment. Reach of the 1951 model Hydro-Trencher has been increased to 16 ft, permitting cuts 8 to 10 ft deep, and loading to heights of 5 ft 6 in. Counterweighting has been increased 2,000 lb.**—The Oliver Corp., Cleveland 17, Ohio.**



PORTABLE MAINTENANCE ROLLER has an unballasted weight of 3 tons; water-ballasted of 5 tons. It trails at normal truck speeds on its own wheels, which are raised and lowered hydraulically. The Ferguson roller has two speeds in each direction. Engine is rated 20 hp.**—Shovel Supply Co., Dallas 1, Tex.**







Rotary Drill Features Continuous Cutting

Designed for all types of heavy-duty excavation work, the Joy Champion utilizes continuous pressure cutting to achieve high production. The tri-cone roller bit employed has three cones that are free to rotate (under pressure) against the bottom of the hole. These bits are available with various tooth designs for use in rock of different hardness. Speed of cut is regulated by controllable hydraulic pressure. The Champion has a semi-automatic device to re-chuck the drill pipe after each 4-ft advance of the bit. A single control lever releases the chuck at the bottom of the feed travel, and after being raised automatically to the top of its stroke, the chuck then automatically grips the square drill pipe by a simple movement of the lever. Centrally controlled jacks make leveling of the drill fast and easy. The integral derrick is raised and lowered hydraulically. Standard mast is 30 ft long, and will handle 20-ft lengths of drill pipe when hoisting and stacking. A 40-ft unit which will handle 30-ft drill pipe lengths is also available. Cuttings are blown away from the face of the bit by compressed air. This air also serves to keep the drill cool-running. Rigid drill stem, controlled feed-pressure, and controlled rotation speed combine to prevent bit wander. *(Continued on page 118)*

There Is More to Wire Rope Than Meets The Eye—

it's the invisible "ingredients" that make the difference.

Other than its one Red-Strand, a "HERCULES" Wire Rope would look pretty much like any other rope having no distinguishing mark. But there is a difference! And that difference is due to a "thousand and one" *invisible* factors. It is made possible by setting up and rigidly maintaining exacting standards . . . by utilizing our almost 100 years of manufacturing experience in the designing and fabrication of wire rope . . . by strictly following the principle of "quality first!"

As it has never been possible to actually see the numerous properties that make one wire rope outlast another, we originated — in 1886 — the idea of painting one strand of "HERCULES" Wire Rope red, and since that time the Red-Strand has not only been a mark by which this rope could be identified, it has been our constant guarantee that its high quality is ever maintained.

Yes, there is more to "HERCULES" Wire Rope than meets the eye, but you can accept, with confidence, the assurance that the Red-Strand provides.

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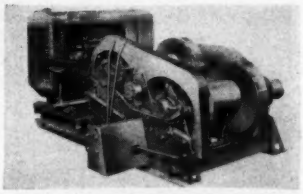
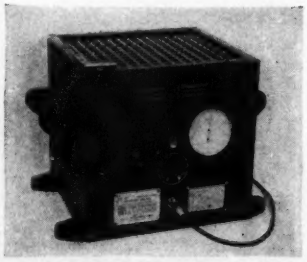
Typical job figures include: 1½ ft per hr in dense, hard dolomite; 50 ft per hr of 6-in. hole at a limestone quarry; 480 ft per day at a coal strip mine, with bit life exceeding 8,000 ft per bit; and 350 ft per shift drilling through silt, mud, clay, shale, sandstone, limestone, and slate. The Champion is available in two models: Heavyweight (Class 58-BH) is rated for 7⅞-in. holes; the Middleweight (Class 56-BH) is rated for 6¼-in. holes. Either electric motor or diesel engine is available as power unit. One power source drives the drilling mechanism, the tramming mechanism, and the hydraulic pump. Standard crawler treads are 16 in. wide, but 32-in. treads are available. **—Joy Mfg. Co., Henry W. Oliver Bldg., Pittsburgh 22, Pa.**

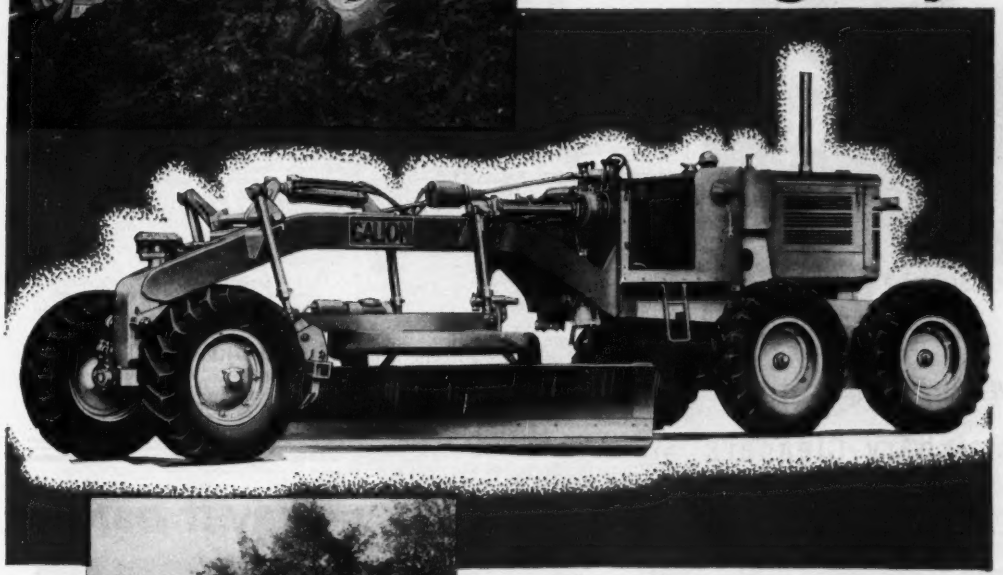


PULL HOIST—Frame-5 8,000-lb line pull hoist features: Smooth operation, safe and positive load control, economy in power consumption, low maintenance, and accessibility of all wearing parts. Equalized linkage of the band clutches provides smooth and even friction engagement and release. Large diameter brakes permit accurate load control. Shafts rotate on ball bearings. Can be used with gasoline, diesel, or electric power. Line speeds range to 279 fpm. **—Clyde Iron Works, Inc., Duluth 1, Minn.**



MAGNETORQUE DYNAMOMETER—Compact, portable dynamometer measures torque developed by prime movers rated from ½ to 10 hp. It features the use of a magnetic-particle coupling. Device may be used at any speed from 0 to 6,000 rpm and is calibrated in the range from 1,500 to 6,000. Accuracy is 5% of full load. Instrument is mounted in an 11x11x12-in. cabinet, and weighs 130 lb.— **Avion Instrument Corp., 121 E. 24th St., New York 10, N. Y.**

Put a GALION GRADER *on the Job!*



FOR SUPERIOR RESULTS

Galion Motor Graders have the power, drive, and weight to really make the dirt "boil" off the moldboard.

— And for PLUS value, you get as "Standard Equipment" —

- ***Constant-mesh transmission for easy shifting — no clashing gears.***
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- ***Highest degree of flotation with large front tires, same size as used on rear.***

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ESTABLISHED 1907 **MOTOR GRADERS • ROLLERS**

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To reduce downtime

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Malsbary Cleaners

Regular cleaning prevents corrosion and abrasion; uncovers need for repairs before damage is serious; saves up to 40% of mechanics' time on repair jobs because no grease wiping is needed.

Stubborn road oils, mud, dirt and grease blast away easily with the soap, water and heat a Malsbary Heavy-duty Cleaner delivers at pressures up to 400 lbs. Cleans in ¼ to ½ time required by conventional steam vapor cleaner. Simple, rugged, dependable. Free from gadgets. Model 300 in illustration, 1 of 3 heavy-duty sizes, gives you 5 cleaning actions; pressures of 250 to 400 lbs.; capacities 300 to 2100 gallons per hour.

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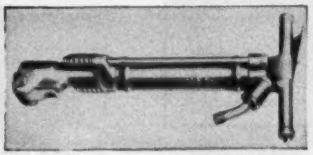
WATER-LEVEL SAFETY SWITCH—Autocon Hi-Level safety switch operates an audible or visual alarm when the liquid level in tanks, rivers, or sumps approaches an unusual load condition, is in danger of overflow; or when other emergencies arise. A ½-in. rise in water level compresses air in the bell chamber, causing the switch to set off an alarm.—**Automatic Control Co., St. Paul 4, Minn.**



LIGHTWEIGHT BREAKER—RC-50 paving breaker (50 lb) is light enough to be handled by one man in horizontal or overhead work. It is especially recommended for brick work, asphalt-cutting, and shop maintenance. The valve provides full control on power and return strokes and is said to assure hard, uniform blows, fast action, minimum recoil, no short stroking and low air consumption.—**Reed Roller Bit Co., Cleco Div., 5125 Clinton Drive, Houston 20, Tex.**

HEAVY-DUTY CABLE HOISTS—Bob-Cat electric hoists are available in ½-, 1-, 1½-, 2-, 3-, and 5-ton capacities. They feature total enclosure of the motor within the cable drum, reducing over-all dimensions and weight, and providing protection against moisture and dirt. Safety factor is 6:1, or better. Load hook oscillates on ball bearings and swivels on roller bearings.—**The Cleveland Chain & Mfg. Co., Broadway & Henry Sts., Cleveland 5, Ohio.**

HEAVY-DUTY DIESEL ENGINES—New line of heavy-duty diesels consists of six models from 145 to 220 hp. These engines are designed to operate at continuous speeds up to 1,400 rpm, permitting their use with torque-converter power transmission. Murphy design features include unit fuel injection, four valves per cylinder and hydraulic servo-type governor.—**Murphy Diesel Co., 5339 W. Burnham St., Milwaukee 14, Wis.**

CHROME-CLAD STEEL TAPE—Leader tape is now available in maroon-colored Vinylite-covered case that resists water and will not stain or scuff. The Chrome-Clad line is corrosion resistant and is said to not chip, crack or peel. Black markings contrast sharply for easier reading. The tape has a roller-type throat and flat stainless-steel edge band flush inset. The Leader is available in 25-, 50-, 75, and 100-ft lengths, with standard or hook ring.—**The Lufkin Rule Co., Saginaw, Mich.**

SUPER SEAL

Gives **BLACKTOP** *a future!*

SUPER SEAL, a perfected coal-tar emulsion, applied to blacktop areas not receiving constant traffic, will not only keep the surface smooth and presentable but seal it against moisture thus eliminating the cause for many blacktop failures.

An ideal preservative treatment for parking areas, tennis courts, private roads and drives, airports, playgrounds, etc. SUPER SEAL makes such installations less subject to trouble, much more durable, acceptable and appreciable.

Super Seal offers a simple, inexpensive means of protecting and permatizing blacktop surfaces. It is unaffected by heat, cold, rain or sun rays and immune to soluble action of gasoline, lube oils, road salts, alcohol and many acids. Yes, a "new day" for blacktop has dawned.

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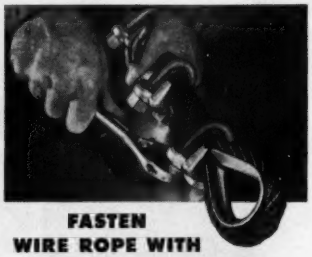
Ask about Dealership or sales representation in your area.

Play it Safe!



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America's largest-selling **DROP-FORGED** *fasteners!*

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You can keep your equipment moving at a profit and get more work done on schedule by using Whitney Chain Drives. That's the everyday experience of prominent equipment manufacturers and users throughout the construction industry.

These rugged, job-engineered chain drives give you cost-cutting, trouble free performance under the toughest service conditions.

Here's why . . . heat treated alloy steel parts are precisely made — durably assembled for *extra* stamina, *extra* dependability. Result: reduced maintenance headaches, fewer delays, bigger profits on every job.

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WHITNEY CHAIN COMPANY

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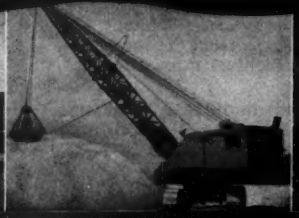
KOEHRING 16-E *twinbatch* provides many special operating advantages for intermediate paving and all types of concrete construction work: 60° elevating boom raises controlled-discharge bucket to a dumping height of 21 feet (higher with special boom) . . . gives complete flexibility of application for elevated pouring. 16-E *twinbatch* mixes and distributes up to 50 cu. yds. per hour, exceeding the capacity of the larger 27-E single drum paver. Big, 92-inch wide skip raises in only 7 seconds . . . split-second Autocycle mixing is controlled by Koehring Batchmeter, saves time on every phase of the operating cycle. As a result, the 16-E can hit a top output of 86.7 batches an hour, on 60-second mixing cycle specification. Vertical, syphon-type water tank assures consistent, maximum strength concrete . . . quarantees accuracy to meet all specifications.

In addition, the 16-E *twinbatch* rides on 6 big 11:00 x 20 pneumatic tires . . . works, travels over pavement without surface damage. Drives job to job at speeds to 6 m.p.h. . . . cuts non-productive moving time, increases work time.

SAVE TIME, MONEY with COMPLETE KOEHRING HEAVY-DUTY LINE



FOR STREETS AND HIGHWAY WIDENING

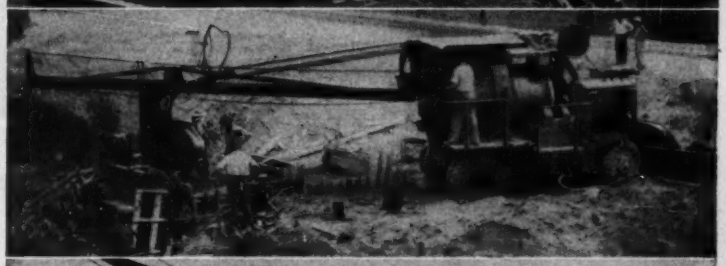
Rubber-tired mobility of 16-E *twinbatch* permits working over streets and new pavement strips without planking. Saves time on the job, and job-to-job. Has overall width of only 8 feet, plus speeds to 6 m.p.h., for fast, self-powered moves.

BRIDGES . . . .

You're not grounded with the 16-E . . . reaches up and out to discharge mixed concrete into forms, hoppers, chutes. Double-channel structural boom is 25 feet long . . . swings in a 160° arc . . . elevates 60° . . . holds firmly in any position . . . discharges controlled bucket at any height up to 21 feet.

CULVERTS . . .

For pouring culverts, and in other similar restricted areas, controlled door on bucket allows gradual discharge, prevents spillage. Clamshell-type bucket door can be opened or closed at any time, operates by hydraulic control. All operating mechanism is outside bucket, prevents clogging. Adjustable strap hangers and perfect oscillation assure vertical dumping position of bucket.



FOUNDATIONS . . .

On footings, pilings, retaining walls, etc., the 16-E *twinbatch* spots its load fast. Big bucket travels 92 feet per minute on elevated boom, 183 feet per minute on horizontal boom. 24 cu. ft. water level capacity of clamshell type bucket is more than ample for full 16 cu. ft. batch . . . plus 10% overload.

BATCHING CONCRETE

The high-production 16-E also can be set up as a central mix plant. Elevated pouring makes it handy for loading trucks, and for handling a variety of miscellaneous batching applications.

It will pay you to check all the other many advantages of this rubber-tired 16-E *twinbatch*. Write for new catalog . . . or call your local Koehring distributor for complete facts.

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Please send us new 8-page catalog on the rubber-tired 16-E Twinbatch.

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Steel tagline holds magnet steady and absorbs the load . . . protective slack is maintained in expensive magnet cable to avoid jerking, pulling loose at the terminals or snagging.

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steadies your clamshell buckets. Provides ample coil spring power at all boom angles to keep bucket lined up with the work. Makes more loads per day easier. Rud-O-Matics are foolproof, trouble-free. Eight sizes meet all requirements. Available immediately. *For full information see your dealer — or mail coupon below.*

I'd like more information on ☐ Rud-O-Matic Taglines, ☐ Rud-O-Matic Magnet Reel-Tagline Combinations. Send literature and complete details.

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PORTABLE STEAM HEATER—Automatic oil-fired heater is recommended for heating large confined spaces. Burner guns are equipped with Catomic adjustable Turbulators—said to provide perfect combustion. Fuel consumption is ½ gal of No. 2 fuel oil per hr. Fuel tank holds 30 gal. The heater is mounted on rubber-tired casters.—**Quiet Automatic Oil Burner Corp., 33 Bloomfield Ave., Newark, N. J.**

ROCK BIT HOLE SAVER—This tool is used to reclaim lost bits and drill steel broken off in the hole in order to save redrilling the hole. Attached to a threaded steel in place of a bit,

its left-hand tapered threads cut in to the metal of the broken rod and remove it quickly, easily and without jamming, the manufacturer states. Tool is threaded for Timken H or D; Rock Bit R-1 or R-2 steel to fit the following size steels—⅞-in. hex, ⅞-in. Q. O.; 1-in. hex, 1-in. Q. O., 1⅛-in. rd; 1¼-in. rd and 1⅛ rd.—**Rock Bit Sales & Service Co., 2514 E. Cumberland St., Philadelphia 25, Pa.**

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Rough "approximations" won't serve an architect, engineer or contractor in the serious business of estimating concrete or determining the proper mixing capacity of a drum.

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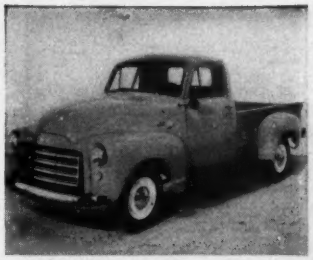
THE FOOTE CO., INC., Nunda, N. Y.
THE JAEGER MACHINE CO., Columbus, Ohio
THE KNICKERBOCKER CO., Jackson, Mich.
KOEHRING COMPANY, Milwaukee, Wis.
KWIK-MIX COMPANY, Port Washington, Wis.
THE T. L. SMITH COMPANY, Milwaukee, Wis.
WORTHINGTON PUMP & MACHINERY CORP., Ransome Division, Dunellen, N. J.



GMC TRUCKS FOR '51 — Light trucks in the 1951 GMC line range in gross vehicle weights from 4,800 to 16,000 lb. Horsepower has been stepped up from 96 to 100 on the 228 engine; and from 110 to 114 on the 248. Valve lifters have been changed to two-piece type to provide better high-speed operation. Pistons are medium-duty lightweight aluminum with deep-wall top rings. Hand brake is installed on rear of the transmission. Cabs are re-designed for maximum operator comfort and safety.—**GMC Truck & Coach Div., General Motors Corp., 660 South Blvd., E., Pontiac 11, Mich.**

MULTI-PURPOSE PUMP — Small Taco pump will handle 10 gpm against a 3-ft head. It is recommended as a water circulator, coolant pump, and for other applications where it is desired to move water or soluble oils not under pressure. Featuring light weight and low-cost operation, it is powered by a 1/25-hp motor, and requires no lubrication.—**Taco Heaters, Inc., 137 South St., Providence 3, R. I.**

AUTOMATIC NAILER — Magnetic-fed hand-driven automatic nailer is designed for fast, accurate nailing. Flat-head nails or brads loaded in the hopper are delivered automatically so that every mallet blow drives a nail. Simple adjustments switch from flush to set nailing, and from common nails to floor brads. All working parts are enclosed.—**Holt Mfg. Co., 651 Twentieth St., Oakland 12, Calif.**

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Today, we supply to the construction industry products of such merit and efficiency as have become generally recognized as being ideal for the function for which they were originally designed.

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The Most Modern Asphalt Plant in America

From California to New Jersey the new Standard Asphalt Plant is being hailed as the acme of modern design – tops for rugged dependability, yet most economical to own and operate.

Unit built. 8 sizes – 500 to 6000 pound batch capacities. *Manual or fully automatic weighing.* Prompt delivery.

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Model 50

CIRCULATING HEATER

Heats by circulation of asphalt or by hot oil through coil system

all tires are rolling tires on GRACE self-propelled PNEUMATIC ROLLER

Eleven Tires
Tank or Open Body

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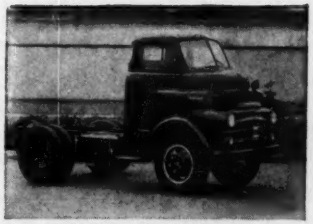
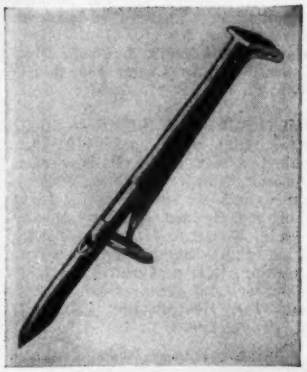
6100 So. Lamar
Dallas, Texas



NEW LINE OF DODGE TRUCKS—B-3 series of Job-Rated trucks is available in a gross-vehicle-weight range of 4,250 to 40,000 lb. Gross combination weights range to 60,000 lb. Increased power, new styling, better brakes, improved steering for easier handling, more driver comfort, and newly designed shock absorbers are among the more than 50 new features claimed.—**Dodge Div., Chrysler Corp., Detroit 31, Mich.**



SELF-CLINCHING NAIL—Stainless steel ES-nail features increased holding power and complete penetration at stud locations. It is recommended especially for face nailing asbestos shingles directly to non-wood sheathing. Rectangular opening in the driving leg permits a bellows-like expansion of the sides of the nail into the sheathing material eliminating danger of loose shingle corners at nailing points where sheathing is backed by studs or wood members. It also permits the nail head to flatten completely and without distortion.—**Elastic Stop Nut Corp. of America, 2330 Vauxhall Road, Union, N. J.**

PROTECTIVE COATING—Non-drying black paste provides protective coating for metals, wood, and concrete. Tinallium Pro-Tex-It is resistant to alkali, rust, corrosion, oxidation, heat, cold, steam, gas, or sulfur fumes either above or below ground. It can be applied by brush regardless of atmospheric conditions, and without pre-treatment over rusty surfaces.—**American Sand-Banum Co., Inc., 9 Rockefeller Plaza, New York 20, N. Y.**

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CUT TRENCH COST 5 WAYS

- You save on your equipment investment. CLEVELANDS longer service life is proved by the high percentage of early CLEVELANDS still in daily use. CLEVELANDS fast jumps between jobs and their famous versatility and wide range of trench sizes mean more work—and more different kinds of work—with fewer machines.
- You save on maintenance. Because of advanced design and rugged "unit-construction" CLEVELANDS cut costly down-time, need little attention.
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- You save on CLEVELANDS established lower fuel and operating costs.
- You save on your entire operation with these handy, dependable machines that keep your whole job stepping along at top speed without expensive delays and holdups. See your local distributor today for facts and figures.

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Diesel Engine Driven Air Compressor

Fuel Savings Up To 50%

Pneumastat, simple and rugged . . . Proper Speeds . . . Less horsepower required . . . Cam operated mechanical intake valves, greater volumetric efficiency. There you have some of the many features in the new Schramm Model 600 Air Compressor . . . features that mean economy while supplying you with 600 cubic feet actual air delivery.

SIMPLIFIED DESIGN

You will like its streamlined, simplified design, too—fewer parts . . . watercooled enabling operation with doors closed . . . Dual fan belts . . . Engine and compressor speeds designed to operate at maximum Diesel Engine efficiency.

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SCHRAMM INC.

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Adams Motor Graders

. . . GAITED FOR TOP PERFORMANCE

8 overlapping forward speeds insure the right working speed for every grading operation . . . Adams Motor Graders give you 2 more forward speeds than several machines of comparable size and power—8 forward speeds instead of 6.

These 2 additional speeds give you an extra working speed and a higher "high"—up to 25 mph. This means greater selectivity of speeds on all types of work—an exactly *right* speed for accomplishing each grader operation at the fastest practical rate . . . plus 30 to 50% faster job-to-job transport.

Let your local Adams dealer show you how 8 forward speeds—and the other big Adams advantages—speed operations, increase efficiency, reduce costs.

Only Adams has this exclusive combination of advantages

- **8 Overlapping Forward Speeds**...Flexible working range speeds work—increases output—provides high transport speeds.
- **Wide Range of Blade Positions**—Without Mechanical Adjustments . . . Saves Time in Adapting Machine to Needed Cuts.
- **Positive-Action Mechanical Controls** . . . Dependable, accurate adjustments—because they're geared . . . Easy, natural steering.
- **Ample Operating Clearances**...Quick, easy adaptation to work . . . Operator comfort, convenience, efficiency.
- **Fast, Easy, Servicing Plus World-Wide Dealer Service** . . . Saves time and money.

Make your next motor grader an **ADAMS**

YOU GET
PILE-SOCKING POWER
WITH

SUPER-VULCAN
OPEN TYPE
DIFFERENTIAL-ACTING
PILE HAMMERS
18C, 30C, 50C and 80C

• Super-Vulcan's terrific impact drives piles down double quick. Super-Vulcan delivers twice the blows per minute, enables you to start jobs faster, finish them up sooner. All this on 25 to 35 per cent less steam.

Users from coast to coast get more dependable performance and longer pile-driving service from Super-Vulcan.

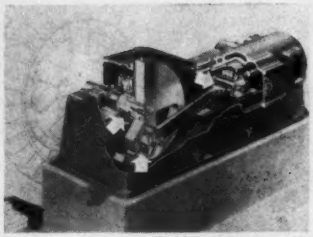
Rugged strength—simple design—positive action—durability—compactness—all are important features. What's more, the open type fits the same leads and uses the same accessories as the Vulcan Single-Acting pile hammer.

Investigate the super-powerful, money-saving Super-Vulcan.

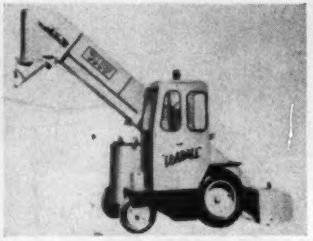
Write for details today.

Sizes: 18C-30C-50C-80C meet all needs

VULCAN IRON WORKS
331 North Bell Avenue
Chicago 12 ... Illinois



BALL-BEARING COMPRESSOR—Class O-CE horizontal duplex motor-driven compressors feature anti-friction roller bearings throughout. Spherical roller main bearings support the crankshaft and are also used at the crank pin end of the connecting rod; double row needle bearings are used in the crankhead end of the rod. Features claimed include: Self-adjusting; long-life; smooth operation; full-flood lubrication; one-piece crank disks and connecting rods; and easy maintenance. —**Chicago Pneumatic Tool Co., 6 E. 44th St., New York 17, N. Y.**



ALL-PURPOSE LOADER — Self-powered Loadall will handle sand, snow, gravel, salt, and other materials without belt changes or special attachments. It travels at 10 mph; working speed to 6½ mph. Loadall loads heavy materials at 1¾ to 2¼ ypm; snow at 6 to 8 ypm. Powered by a 4-cyl gasoline engine, the Loadall features 24-in. spirals with replaceable, toothed digging edges.—**N. P. Nelson Iron Works, Inc., Clifton, N. J.**

ACCIDENT RECORDER—Compact photographic unit provides all equipment to take on-the-spot accident photographs. It is packed in a compact self-mailing case and has brackets and screws for mounting in cab, body, or trunk of any vehicle. Kit contains an Alrax camera, flash attachment, flash bulbs, simple instructions, and record forms. The kit is designed primarily for use in lowering liability and operating costs. Complete services in connection with developing pictures, maintenance of equipment, and negative files are handled by: **Automotive Liability Reduction Assn., Inc., 11 W. 42nd St., New York 17, N. Y.**

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...and drill holes in concrete faster and easier. TERMITES are the answer. They step-up manpower efficiency on all concrete drilling jobs. Enables you to drill more holes with fewer drills. Diameters up to 5". Fits standard electric drills. Get details today.

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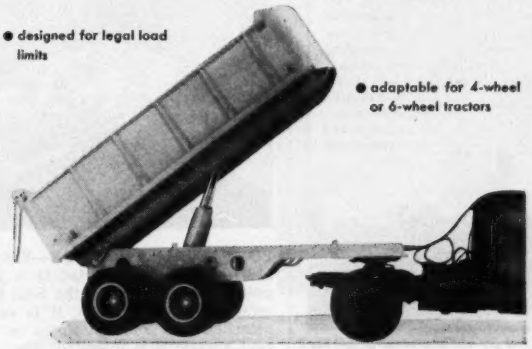
THE TALBERT removable gooseneck* LOW-BOY TRAILER

This rig is owned by
THE BESL TRANSFER CO., of Cincinnati, Ohio

THE TALBERT DUMP SEMI-TRAILER



- designed for legal load limits
- adaptable for 4-wheel or 6-wheel tractors

featuring

- Minimum empty weight—maximum payload
- Front end loading—no rear bridge, short boards, minimum blocking, etc.
- Light-weight Removable Gooseneck*—no moving parts
- Fast, easy, safe one-man operation
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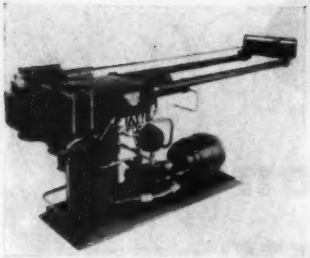
- Spring tandem suspension—for high road speeds

TALBERT CONSTRUCTION EQUIPMENT COMPANY

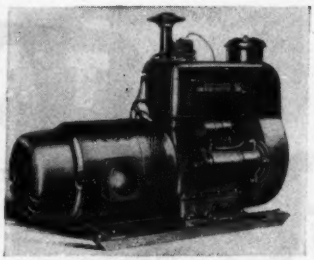
7950 West 47th Street • Lyons (Chicago Suburb), Illinois

Manufacturers of TALBERT Low-Bed Trailers



HYDRAULIC PIPE BENDER—Compact bending machine is powered by a 2-hp motor. It is operated by a single lever that causes the bending arm to swing around to the degree of bend selected. Bending die is held on by spring clips, for easy changing. Bends can be made to either the right or left. Weight of the Model 800 is 900 lb.—**Wallace Supplies Mfg. Co., Inc., 1300 Diversey Parkway, Chicago 14, Ill.**

ARC WELDERS IN THREE SIZES—Marquette arc welders are available in 200-, 300-, and 400-amp capacities. Feature of the 80 Series is the use of Hipersil steel transformer cores, said to provide greater flux-carrying capacity and reduced power consumption and operating costs.—**Marquette Mfg. Co., 307 E. Henn, Minneapolis, Minn.**

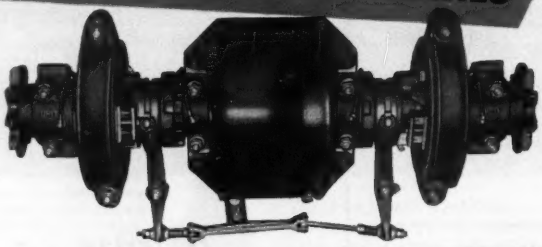


ELECTRIC PLANTS—G-line plants are available in 300-, 600-, and 1,000-w capacities with Briggs & Stratton engines; and in 1,500-, 3,000-, 5,000-, and 10,000-w sizes powered by Wisconsin engines. The G-line can by used for standby or continuous duty. Various models are available in each size, in ac or dc, with complete range of voltages, cycles, phases, and with manual or remote electric starting.—**Winpower Mfg. Co., Newton, Iowa.**

TUBE AND PIPE FITTINGS—Corrosion-resistant fittings are designed to simplify tube and pipe installations. The Speedline insert flange combines strength at the connection and corrosion resistance throughout the internal area. Advantages claimed include: Assembly does not have to be heat treated; pipe cutting is simplified—thickness of a gasket is the only allowance that must be made; and an expanding tool and plain wrench are the only tools required. Available in sizes from ½ through 6 in. Other Speedline fittings include an aligning connector and low-cost union.—**Horace T. Potts Co., Erie Ave. & D St., Philadelphia 34, Pa.**

1 of 10 Reasons Why UNIT is a Better Machine

Automatic TRACTION BRAKES



All UNIT crawler-type machines are equipped with Automatic Traction Brakes. This exclusive UNIT feature is an internal expanding, friction-type locking device for both crawlers. Engaged and released automatically, it provides traction lock without the necessity of manual control. Here is positive braking power in either direction of travel — holds fast, even on steep grades, without creeping. Steering is done by single lever control. Brakes can be re-lined without dismantling brake-shoes or drums — linings slide in-or-out in a matter of minutes. Lower traction gears are completely enclosed, running in a constant bath of oil — protection against abrasive wear.

UNIT CRANE & SHOVEL CORPORATION
6305 W. Burnham Street, Milwaukee 14, Wisconsin, U. S. A.

The UNIT 1020A-¾ YD. machine is built to give wear resisting, peak performance at low maintenance and operating cost. Extra long crawlers, wider axles and shoes, plus additional counterweight, provide perfect balance and all-around stability.

This is the 4th of a series of ten ads describing outstanding UNIT features.

Crawler and Mobile models — ½ and ¾ Yd. Excavators. Cranes up to 20 tons capacity.

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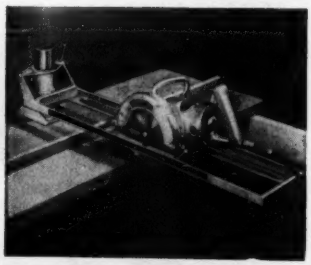

PORTABLE SAW GUIDE—Electric saw is quickly converted to a portable radial saw using the Skil saw-guide. Weighing 26 lb, it is easily attached to a small platform on two saw horses. It is made for use with the Models 77, 825, 87, Skilsaws, and other makes having a base-width capacity of 4 13/16 to 5⅛ in. The Saw-Guide has a radial range of 120 deg (60 deg right or left) and a bevel capacity of 45 deg. Maximum cut-off capacity is 17 in. Maximum ripping width is 28 in.—**Skilsaw, Inc., 5033 Elston Ave., Chicago 30, Ill.**

Indiana rejuvenates a worn highway

21 miles of US-6 are undersealed and resurfaced with Texaco Asphalt

When Indiana decided last year to recondition 21 miles of US Route 6, it was not satisfied with half-way measures. Before constructing a new asphalt wearing surface over the old concrete pavement, the state highway department specified that all voids which had developed under the pavement be filled with asphalt, thus restoring full support to the slab.

The material used to fill voids was a Texaco Asphalt of 25-35 penetration, which road builders have pumped under a substantial mileage of old concrete and found ideal for the purpose. Approximately 105,000 gallons were needed to fill all voids under this 21-mile highway.

For the new wearing surface, Indiana called for a plant-mixed asphalt pavement laid in two courses, each 1½ inches thick. Gravel was employed as aggregate, with a Texaco Medium-curing Cutback Asphalt serving as binder in the mix. Emulsified asphalt was used to prime the old concrete pavement and to seal the new asphalt surface.

Today, with available road funds failing to keep pace with increasing traffic demands, it is more important than ever that America protect its investment in existing highways. As demonstrated on Indiana's US-6 project, Texaco Asphalt products help salvage old, worn paving just as effectively as they help construct new highways.

Two helpful booklets which describe all types of Asphalt construction for streets and highways can be secured without charge by writing our nearest office.

Constructing two-course Texaco Asphaltic Concrete pavement on 21 miles of US-6 in northern Indiana, after the old pavement was undersealed with a 25-35 penetration Texaco Asphalt. View of completed project at right. Undersealing by Fenton Construction Company, Ashland, O. New surface laid by Brooks Construction Company, Fort Wayne, Ind.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

TEXACO

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TEXACO ASPHALT

Cut Earth Boring Costs WITH THE PENGO EARTH AUGER

"You'd be surprised where the PENGO Auger will bore!"

A scientifically-designed double helix auger that:

★ Bores in any kind of soil, hardpan, decomposed rock, permafrost, or frozen ground

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★ Saves power, minimizes wear and tear on your earth boring machine

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"THE MOST PROFITABLE TOOL YOU EVER BOUGHT". Order a PENGO for your present machine ... specify PENGO augers with your new machine.

Available in nine diameters to 36" (actual HOLE sizes) for use with all popular makes of earth boring machines.

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460 Kifer Road, Santa Clara, California

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Cut Costs! with ONAN portable ELECTRIC PLANTS

MODEL 3CK
3,000 watts A.C.
5,000 watts D.C.
with carrying frame
or dolly-mounted

Take 'em Anywhere!

Increase your profits by using fast-working, cost-cutting electric tools on every job, even where highline power is not available. Lightweight, sturdy, Onan engine-driven electric plants supply instantly-available power *anywhere* for lights, drills, saws, pipe-threaders, planers, spades, tampers, repair-shop tools and other motor-driven equipment. Carry 'em, wheel 'em, or truck 'em right to the spot and plug in for all the power you need. Equipped with carrying handles or dolly-mounted.

Lightweight Air-Cooled Models: A.C.—400 to 3,000 watts. D.C.—750 to 5,000 watts. Heavy-duty models to 35,000 watts.

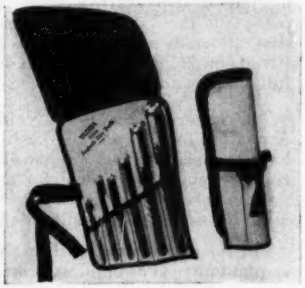
Write for Free Folder!

D. W. ONAN & SONS, INC.

6774 University Ave. S. E., Minneapolis, Minnesota

SHOULDER-TYPE FITTINGS— Plastic ells, tees, and couplings are designed for use with the newly developed Carlon TL threadable, rigid plastic pipe. The external shoulders are said to greatly increase the over-all strength of the fittings. Molded from a single piece of thermoplastic material and featuring International Pipe Threads, the fittings are guaranteed against rot, rust, and electrolytic corrosion.—**Carlon Products Corp., 10153 Meech Ave., Cleveland 5, Ohio.**

BIN AND HOPPER VIBRATOR — Style EM quiet-type vibrator employs heavy pistons and long strokes to produce intense, positive vibration. Breakage of bolts and end plates is said to be practically eliminated. The EM is available in 1⅝- to 4-in. sizes. — **Cannon Vibrator Co., 1108 Power Ave., Cleveland 14, Ohio.**



CONCRETE-DRILL-BIT KIT — Rotary Konkrete Kore drill kit consists of six bits—three of the centerless type (3/16-, ¼-, and ⅜-in. sizes); and three of the Kore type (½-, ⅝-, and ¾-in. sizes). Bits are packaged in a roll-around plastic case.—**Tilden Tool Co., 1995 N. Fair Oaks, Pasadena, Calif.**

HYDRO UNLOADING VALVE— Hydraulic unloading valve features a balanced piston design for close accurate fit in the valve bore. Model 8826 is used in oil hydraulic circuits to unload one part of the circuit at no back pressure to the tank. Valve is operated by pilot pressure from some other part of the circuit. Available in sizes ¼ to 1½, in two pressure ranges of 50 to 150 psi, and 500 to 1,500 psi.—**Rivett Lathe & Grinder, Inc., Brighton 35, Boston, Mass.**

OFFICE COPYING MACHINE— Entirely self-contained copying machine requires no inks, tray developing, dark rooms, subdued or special lighting. The BW Copyflex employs the diazo process and accomplishes the entire copying process within itself, with no need for plumbing or exhaust fans. The BW handles any copy up to 11½ in. wide. It measures 29½x28x50 in.—**Charles Bruning Co., Inc., 100 Reade St., New York 13, N. Y.**

"Low level bidding" gets the job— maintains profit

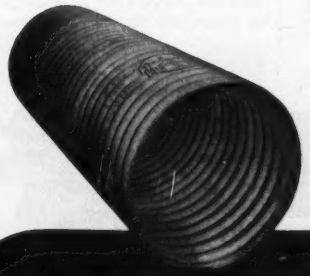
Successful drainage bids are ones that get the job and *retain adequate profit.* That's why so many experienced contractors are practicing "low level bidding" with Armco Corrugated Metal Pipe. They have found the cost of installing short, sectional pipe requires higher bids to maintain profits.

Figured on an *installed* basis Armco Pipe saves money in many ways. Flexible, corrugated metal design assures ample strength without excess weight. This means low handling and hauling costs. Job costs are low because unskilled labor quickly and easily makes the installation. There is no breakage, no curing, no waste, no delay.

Individual sections of standard Armco Corrugated Pipe and PIPE-ARCH are supplied in any length that can be hauled and handled. No large and expensive equipment is required for installation. A few men with a rope sling or a small A-frame can handle the largest structure. Connections are made with simple band couplers. Where end finishing is needed, prefabricated Armco End Sections are simple to install.

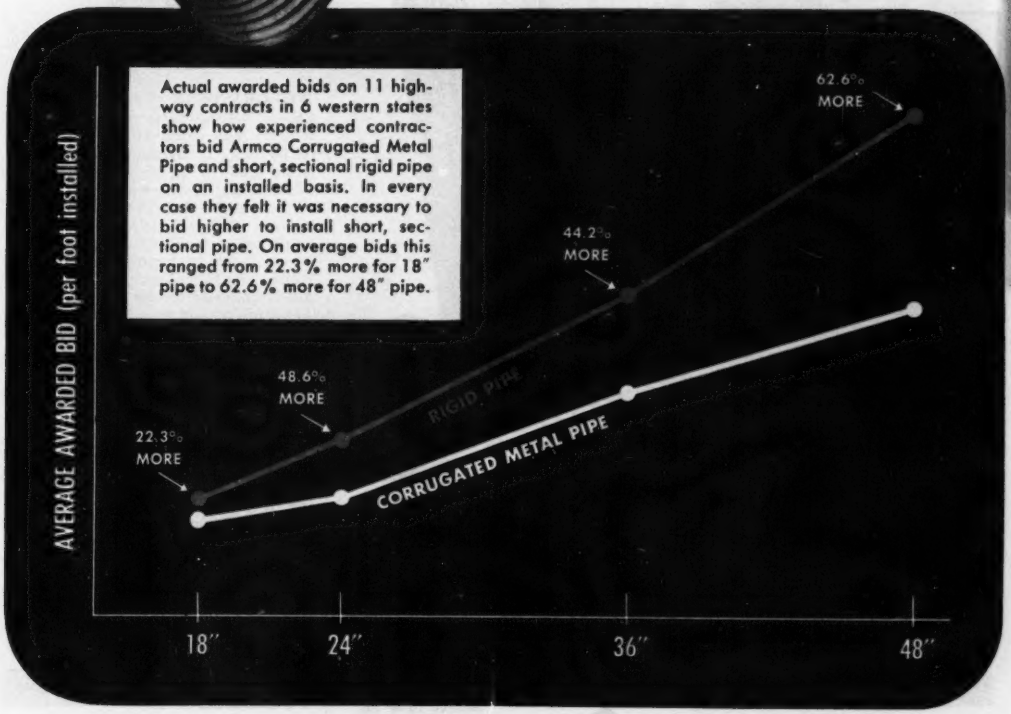
Use Armco Drainage Products on highways, railways, airports and wherever else you need economical, easy-to-install drainage structures. Armco Drainage & Metal Products, Inc., 1571 Curtis Street, Middletown, Ohio.

Export: The Armco International Corporation



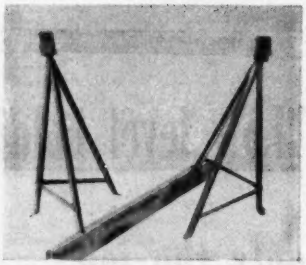
ARMCO CORRUGATED METAL PIPE

ARMCO


Actual awarded bids on 11 highway contracts in 6 western states show how experienced contractors bid Armco Corrugated Metal Pipe and short, sectional rigid pipe on an installed basis. In every case they felt it was necessary to bid higher to install short, sectional pipe. On average bids this ranged from 22.3% more for 18" pipe to 62.6% more for 48" pipe.
AVERAGE AWARDED BID (per foot installed)
62.6% MORE
44.2% MORE
48.6% MORE
22.3% MORE
RIGID PIPE
CORRUGATED METAL PIPE
18"
24"
36"
48"

HEAVY-DUTY MOTOR GRADER—Model 104 grader features constant-mesh transmission providing six overlapping forward speeds (1.1 to 20.1 mph). High reverse speed is 8.4 mph. All shifting (forward or reverse) is accomplished by a single lever. Hydraulic shiftable moldboard (optional) provides a maximum extension of the blade 97 in. beyond rear tires with a 12-ft moldboard. Weight is from 21,840 lb up, depending on extra equipment.—**The Galion Iron Works & Mfg. Co., Galion, Ohio.**

NEON FLASHER LIGHT—Battery-operated neon warning light is said to operate for 1,200 hr on a specially designed 6-v battery. Neo-Flasher is weatherproof, vaporproof, and shock resistant. It produces sharp red flash at ½-sec intervals. Flasher is available in two models—one model has 360-deg plastic lens which casts a warning light in all directions (visible for more than 2,500 ft; other model has 5-in. reflector head and is visible for 2 mi. Clips are available for locking light in place to prevent theft.—**Light Products, Inc., 407C Commercial Center, Beverly Hills, Calif.**



THREE-LEGGED SAW HORSE—Knee-action in the head-piece provides a saw horse that will set evenly on rough or irregular surfaces. Each of the three feet rests independently; safely adjusting to any irregularity up to 2 in. or any slope in any direction. Sweet supports are available in heights from 18 in. to 5 ft. Built of angle irons, they fold compactly into an easy-to-carry size. —**H. C. Sweet Co., 12083 Woodbine Ave., Detroit 28, Mich.**

MK 800A

Helping to Build
CANADA'S NEW SUBWAY

Down go steel piles to help build a new 4½ mile subway — Canada's first — in Toronto. The contracting syndicate of Pitts, Johnson, Drake and Perrini selected a McKiernan-Terry Pile Hammer for the pile driving job.

Toronto's new subway is being built along its busiest thoroughfares, Front and Yonge Streets. To help support the heavy traffic on a temporary street surface, steel soldier piles were driven along both sides of the street by a McKiernan-Terry 9-B-3 Double-Acting Pile Hammer. The 12" x 12" H piles were hammered 20 to 40 feet into the ground with the steam hammer developing 8,750 ft-lb at 145 blows per minute. • This is another example of why hundreds of contractors choose McKiernan-Terry Pile Hammers for fast, accurate, economical pile driving. 17 sizes of hammers and extractors are available in the McKiernan-Terry line. Write for bulletin giving all the facts.

GRAB BUCKETS

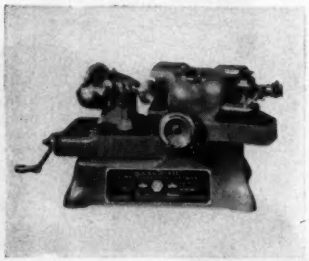
COAL TOWERS

TRANSFER BRIDGES

HONING TO 42" I.D.

McKIERNAN-TERRY CORPORATION
Manufacturing Engineers
14 Park Row, New York 38, N.Y.
Plants: Harrison, N. J. and Dover, N. J.

McKIERNAN TERRY



WET-GRINDING VALVE REFACER — Deluxe super-service refacer will traverse grind all valves from 0 to 90 deg. It handles valve stems from 9/32 to 11/16 in. and has a valve head capacity up to 4 in. in dia. Wheel head is at a 20-deg offset, permitting traverse grinding of any angle valve face including flat type. Work head is hypoid-gear driven. Hand wheel on work head gives quick-clamp action on stem in collet. Attachments for grinding stems, tappets, and rocker arms are standard equipment. Wheel dressing attachment is also standard equipment.—**The Black & Decker Mfg. Co., Towson 4, Md.**

CLUTCH COUPLING — Centrifugal clutch coupling for heavy equipment permits vertical lift from the mounting of either driver or driven equipment. In operation, the driving spider slides back over the driving hub far enough to clear the driven half of the coupling, permitting either member to be lifted clear of the other. Couplings are available for Rawson standard shoes or spring-controlled shoes. They come in nine sizes ranging from 6x2 to 24x8 in.—**Centric Clutch Co., 22-26 South Ave., W., Cranford, N. J.**

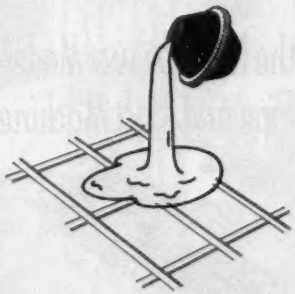
For the toughest drainage jobs... concrete pipe reinforced with American Welded Wire Fabric

ON the nation's highways, railroads and airports, the tremendous volume of surface run off is handled most efficiently by reinforced concrete pipe. In water supply and sewer systems, too, reinforced concrete pipe handles the volume, withstands the pressure, maintains effective leakage limits.

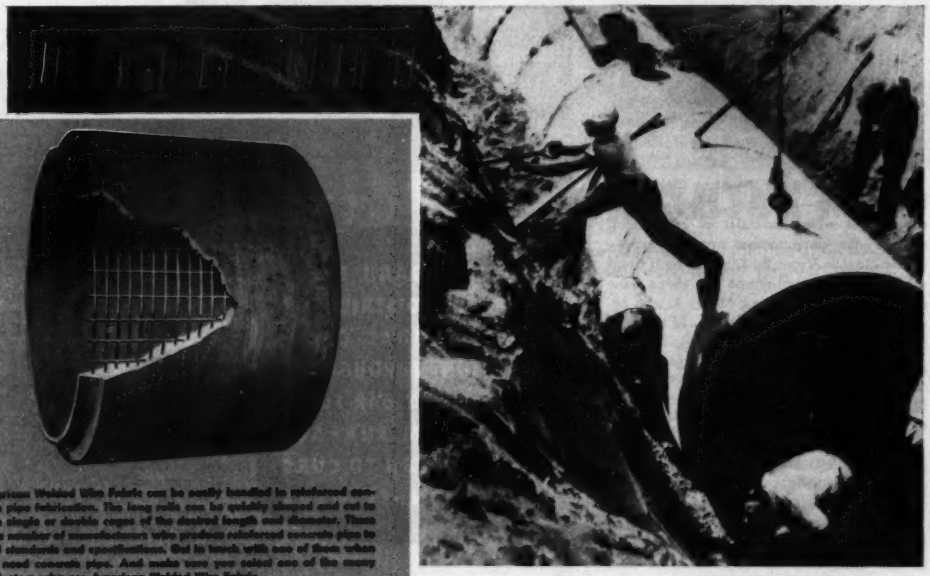
Prominent fabricators have established uniform specifications for the manufacture of reinforced concrete pipe. Those specifications meet the standards set by the A.S.T.M. And an impressive proportion of the industry's output is reinforced with American Welded Wire Fabric, the *reinforcement* for concrete that meets all A.S.T.M. requirements.

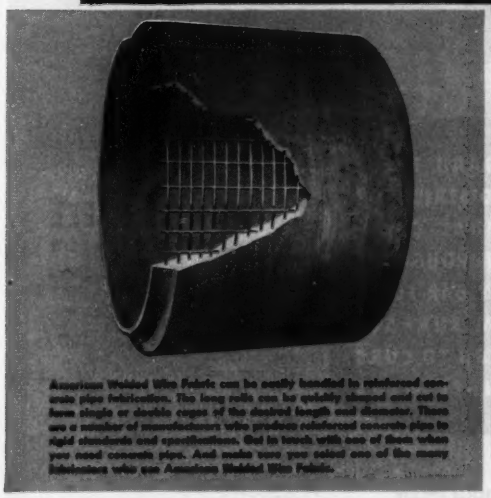
American Welded Wire Fabric distributes the strength of high yield point steel throughout all parts of the pipe and forms a perfect bond with concrete. The welded fabric can be quickly and easily shaped into cages to fit molds that produce pipe sections of various diameters and lengths. The reinforcement stays in place during pouring and tamping.

So, when you are planning projects that require reinforced concrete pipe, be sure the pipe you get is reinforced with U·S·S American Welded Wire Fabric.



AMERICAN STEEL & WIRE COMPANY, GEN. OFFICES: CLEVELAND
COLUMBIA STEEL COMPANY, SAN FRANCISCO
PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK





American Welded Wire Fabric can be easily handled in reinforced concrete pipe fabrication. The long rolls can be quickly shaped and cut to form single or double cages of the desired length and diameter. There are a number of manufacturers who produce reinforced concrete pipe to rigid standards and specifications. Get in touch with one of them when you need concrete pipe. And make sure you select one of the many fabricators who use American Welded Wire Fabric.

Every type of concrete construction needs

AMERICAN WELDED WIRE FABRIC

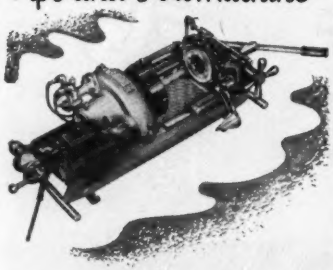
reinforcement

USS

UNITED STATES STEEL

• LIGHTWEIGHT
• LOW-PRICED
• EASY-TO-MOVE

the New Beaver Model-E Pipe and Bolt Machine



The new low-priced, lightweight Beaver Model "E" is a "junior edition" of the heavy-duty Beaver Model A—which has, for the past 20 years, been the recognized leader in the field of portable pipe and bolt machines.

The Model "E" uses the same dieheads—the same dies—the same patented interchangeable wheel-and-roller or knife cutoff devices—the same reamer arm and cone—as the Models A and B. This will be a great advantage to thousands of shops now equipped with the Beaver Model A or B because it eliminates the necessity of carrying in stock duplicate dies and parts—thereby preventing endless confusion and needless expense. And remember, there are 195 different kinds and sizes of dies instantly available for Models A, B or E.

Although designed primarily for hardware stores and small piping contractors, BIG contractors will find the new Model "E" useful on jobs requiring extreme portability.

A pipe machine is no better than the service back of it and our 50 years of experience in this field, and our reputation for high quality and friendly service, is your best guarantee of complete satisfaction.

WRITE FOR BULLETIN E

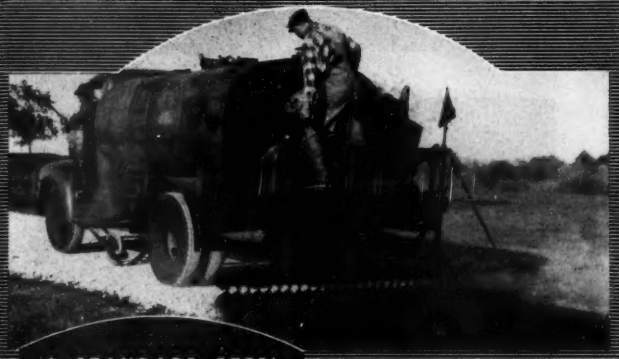
BEAVER PIPE TOOLS

228-300 DANA AVE. • WARREN, OHIO, U.S.A.

HYDRAULIC TAIL GATE—Frate-Gate has a capacity of 2,000 lb. It is designed to fit all platform, van, or stake-body trucks. A Saf-T-Center control valve automatically stops the gate's travel when operator releases hand pressure. Available in platform sizes from 84x28 to 90x34 in. Mechanically locked when level with the floor of the truck body, it has positive hold in any position.—**Gar Wood Industries, Inc., St. Paul Div., 2207 University Ave., S. E. Minneapolis, Minn.**

FAST-DRIVING BLIND RIVET — One-sided fastener is especially suited for blind applications. Design is said to preclude splitting on the upset side. Supplied in sizes 1/8, 5/32, 3/16, and 1/4 in., aluminum or steel, countersunk or brazier head.—**Rocket Distributors, Inc., 209-14 Forty-First Ave., Bayside, L. I., N. Y.**

NO TIME LOST!
LOADING OR LAYING ITS LOAD



A STANDARD STEEL PRESSURE DISTRIBUTOR GIVES EQUAL CIRCULATION THROUGHOUT THE SPRAY BAR FOR A UNIFORM SURFACE FROM CURB TO CURB FOR LONGER WEAR

STANDARD STEEL PRESSURE DISTRIBUTOR

The Model 424 can be loaded in quick time for a "fast getaway". A two-way cleaning system guarantees a clean spray bar at the end of the day. First, the material is sucked out of the bar and back into the tank. Then by turning one small valve, cleaning solvent is released into pump and spray bar (without contaminating the asphalt in the tank). No time lost in tinkering — no time lost in loading — Standard Steel 424 keeps going all day long far ahead of the "gravel gang"

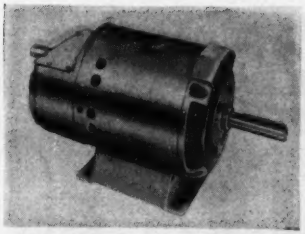
WRITE FOR CATALOG 424

OTHER PRODUCTS OF STANDARD STEEL

Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms.

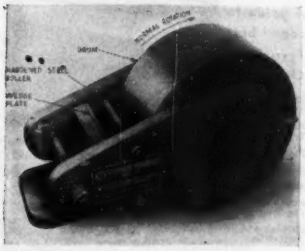
Built to the Highest Standard

Standard Steel Works NORTH KANSAS CITY, MO



MAGNETIC-PARTICLE CLUTCH—Reversing, two-speed Magneclutch has two driving members (rotating in opposite directions) and one driven member. These clutches employ a dry magnetic torque medium, and are electrically controlled. Use of the single, low-inertia driven member results in elimination of backlash in output shaft. Gearing arrangement is not limited to any particular ratio. Or, gearbox may be omitted entirely and each of the driving members connected directly to separate sources of power.—**Vickers Electric Div., Vickers, Inc., 1815 Locust St., St. Louis 3, Mo.**

HYDRAULIC - SCOOP ATTACHMENT—Actuated by a two-way hydraulic cylinder the hydraulic-scoop attachment tips 45 deg forward for dumping, and 30 deg backward for carrying. Quick-detachable couplings in the hydraulic line and simplified suspension from the fork support shaft make the accessory readily interchangeable. Available in capacities ranging from 9 to 17 ft.—**Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio.**



INCLINED - CONVEYOR HOLDBACK — Roller-type holdback is designed to prevent reversal of inclined conveyors and bucket elevators when power is interrupted. A hardened-steel roller floats between a wedge plate and a drum keyed to the head shaft. When direction of rotation of the head shaft starts to reverse, due to power failure, the hardened steel roller is immediately wedged between the drum and the plate, stopping motion gently and without shock. When power is reapplied, the holdback releases automatically.—**Stephens-Adamson Mfg. Co., Aurora, Ill.**

with MIXERMOBILE M-7

New 2-yard MIXERMOBILE cuts concrete costs at the new state building, Portland, Oregon. (Pouring was done by the Weston Concrete Construction Co.)

The 2-yard MIXERMOBILE is a complete mobile concrete mixing and elevating plant. One mobile unit does all these things:

Handles aggregates—saves through use of dump trucks.
Accurate mixing—foolproof batch timer and electronic water meter.
Elevates on the job—saves cost of hauling and erecting tower.
Portable elevating and agitating storage plant for Ready Mix.

All in one mobile unit . . . entire operation handled by one man. Mixes up to 50 yards of concrete per hour. This amazing M-7 MIXERMOBILE is built for rugged use . . . it's low in maintenance, efficient, and flexible. The M-7 moves from job to job (highway speed 40 mph, meets all highway requirements) saving money on every job . . . making lower bids possible. FEATURES INCLUDE: Electronic water meter, measures water from zero to 100 gallons automatically . . . Hydraulic Controls; Power Divider Transmission; Discharge Timer.

M-7 Ready For Travel

WRITE TODAY FOR LITERATURE AND YOUR NEAREST DEALER

We reserve the right to make improvements in design and specifications without notice.

MIXERMOBILE MANUFACTURERS

MIXERMOBILE

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LAUSON

ENGINES RUN cooler!

LAST longer!

Only Lauson has a stream of cool air directed over *both* valves at the same time! . . . greatly reducing engine heat! Another Lauson feature is the cylinder — with extra fins and special head for dissipating heat faster — resulting in cooler operation. These extra engineering refinements . . . and many more add up to true dependability and longer engine-life . . . two factors that make Lauson the best engine buy, anywhere!

...RUN smoother TOO!

Listen to the sweet, velvety purr of a Lauson engine, and you'll know why builders of quality equipment specify Lauson — it's the smoothest power built!

OUTBOARD MOTORS

LAUSON

PORTABLE ENGINES

THE LAUSON COMPANY
New Holstein, Wis., U. S. A., Div. of Hart Carter Co.
In Canada: Hart-Emerson Co. Ltd., Winnipeg

PORTABLE ELECTRIC HAMMER —Simplified design results in a unit with only one working part. Model 437 portable electric hammer incorporates a specially designed power unit consisting of two alternately energized magnetic coils, eliminating gears, cranks, and connecting rods. This 1⅛-in. hammer has an efficient operating range of ¾- to 1⅛-in.-dia star drills and extreme operating limits of ⅜- to 1½-in.-dia star drills. It is 16¼ in. long, weighs 20 lb, and strikes 3,600 blows per min.—**Skilsaw, Inc., 5033 Elston Ave., Chicago 30, Ill.**

HOW TO ESTIMATE CONSTRUCTION COSTS

A guide to sound bids

SAMPLE CHAPTERS

- —Estimating in General
- —Handling and Transporting
- —Excavation
- —Concrete
- —Masonry
- —Roofing and Flashing
- —Lathing and Plastering
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A reliable working guide that covers every element to be considered in bidding for a construction job. It includes step-by-step procedures for computing accurate estimates on concrete work, steel, electrical installation . . . any kind of construction you're apt to meet in modern building plans. Practical examples of estimates worked out in detail demonstrate how to apply the methods outlined.

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This offer applies to U.S. only

Here's your BLAW-KNOX "Complete Package" of concrete construction equipment

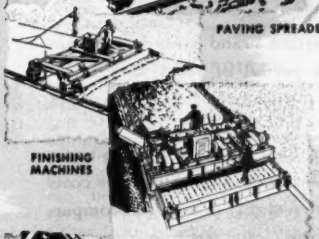
To give you all these advantages:

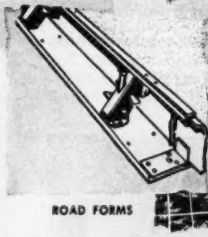
- *One source* for every piece of equipment you need —from forms to finisher.
- *One* undivided responsibility to back up the performance of all your equipment.
- *One financial arrangement* covers the entire "package."
- *One source* for parts and expert mechanical service.

IN ADDITION to these one-source advantages, you get the lower cost operation that comes with 100% mechanized production. There are many other reasons why you get more and save more with the all-way benefits of the two Blaw-Knox "Complete Packages" of matched equipment—one for concrete paving and one for ready-mix concrete. See your Blaw-Knox distributor for complete details.

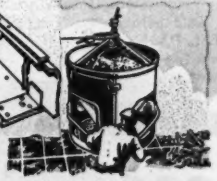
CLAMSHELL BUCKETS

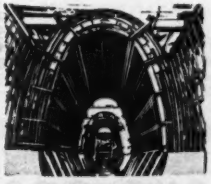
PAVING SPREADERS


FINISHING MACHINES


SUBGRADERS

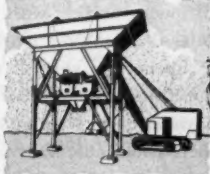
ROAD FORMS


CONCRETE BUCKETS

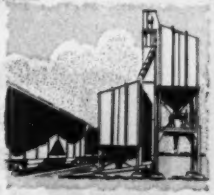

STEEL FORMS FOR GENERAL CONSTRUCTION

CURB AND GUTTER FORMS

TRUCK MIXER LOADING PLANT AND CENTRAL MIXING PLANT


AGGREGATE BATCHING PLANTS

TRUCK MIXERS AND AGITATORS


BULK CEMENT PLANTS

BLAW-KNOX

BLAW-KNOX DIVISION OF BLAW-KNOX CO., Farmers Bank Bldg., Pittsburgh 22, Pa.
New York • Chicago • Philadelphia • Birmingham • Washington • San Francisco

Which wire rope dollar buys the most service?

Isn't it true that when you purchase wire rope, you're actually buying service? Buying what the wire rope will do for you? Buying units of work?

The rope dollar that buys the most units of work has been wisely spent. Can you tell which brand of rope is giving you the most for your money? There are many users who can—by keeping records of wire-rope performance. They know what constitutes good, average service in terms of ton-miles, yards of rock moved, etc. When a certain brand gives better-than-average service over a period of years, they know they're getting a big return on the dollars spent for that brand.

Their figures prove it. That's why Bethlehem urges the keeping of records—records that show rope costs per unit of work. For we feel that in any such comparisons, Bethlehem rope will stand out from the crowd . . . in a way that will please the user's pocketbook.

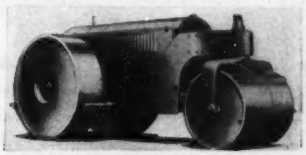
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

LET YOUR RECORDS TELL YOU!

MASONRY WATERPROOFER — Siliphane compound (silicone base) is said to make porous masonry walls water-repellent. This transparent material can be brushed or sprayed on exterior, above-grade masonry walls of all types. Siliphane is said to penetrate deeply, coating the masonry with a microscopically thin water-repellent film.—**Prima Products, Inc., 10 E. 40th St., New York 17, N. Y.**

DIESEL COMPRESSOR—Portable compressor, powered by an International Harvester UD-24 diesel, has an actual air delivery of 600 cu ft. It is recommended for operating two large-size wagon drills, six heavy-duty rotating drills, large cement guns, and sandblasting outfits. Weight, on skids, is 12,500 lb; on 4-wheel spring mounting, 13,000 lb.—**Schramm, Inc., West Chester, Pa.**



THREE-WHEEL ROLLER — Variable-weight three-wheel roller is available in 10- and 12-ton (unballasted) weights. The Chief can be equipped with 20- or 24-in.-wide rear rolls. Water ballast adds 2 to 3 tons, depending upon size of roller. Rolls can be supplied with mats and sprinklers for use on finishing work. Other features of the Chief include: Spur-gear final-drive, cab-controlled differential lock, hydraulic steering, and gasoline or diesel power unit. —**The Galion Iron Works & Mfg. Co., Galion, Ohio.**

PIPE COUPLINGS — Rolagrip couplings for plain-end pipe require no threading, grooving, flanging, or other preparation of pipe ends. They permit misalignment of pipe ends up to 7 deg, and, according to the manufacturer, will withstand shocks, jolts, vibration, expansion and contraction, and end pull. Loosening two bolts permits inspection, repair, or cleaning of the Rolagrip union. Couplings can be re-used.—**Gustin-Bacon Mfg. Co., Kansas City, Mo.**

ALUMINUM-ALLOY RIVET—Large-size aluminum-alloy rivet has these characteristics: Average shear strength of 38,000 psi within two weeks after driving; wide temperature range for driving; and good resistance to corrosion when used in recommended applications. The XB77S rivets can be hot-driven by hand pneumatic hammers. They are available in ½-, ⅝-, ¾-, ⅞-, and 1-in. sizes. (The 1-in. size must be squeeze driven.) These rivets should be heated in air and soaked within the specified temperature range (850 to 975 F) for 15 min.—**Aluminum Co. of America, 801 Gulf Bldg., Pittsburgh 19, Pa.**

REFLECTIVE INSULATION—Type A Richflex consists of two sheets of Richflex-coated kraft paper bonded with asphalt. It is reinforced at the edges and center to provide nailing strips. Type B consists of one sheet of coated kraft bonded with asphalt to one sheet of plain kraft. Type C is a single sheet of kraft coated on both sides with Richflex. These Richflex insulators can be used in walls, ceilings, or under floors.—**The Richkraft Co., 228 N. LaSalle St., Chicago, Ill.**

Here is Marlow's NEW lightweight, economical MUD HOG pump

The ideal diaphragm pump for seepage control and ditch work. Thoroughly proved on construction jobs.

LIGHTWEIGHT — Easily moved by one man, lifted by two.

LOW COST — Less than half the cost of other Mud Hogs.

RUGGED — Handles clear or trashy fluids . . . from a gurgle to a gush . . . up to 3,200 GPH. Strongly constructed for long trouble-free service.

OTHER NEW FEATURES — Two self-aligning crank shaft bearings and shaft and bearing failures. Strong, simple power transmission reduces maintenance. Many other outstanding features.

Ask your Marlow distributor or send for complete details on this new money-saving pump.

MARLOW PUMPS
516 Greenwood Ave.
Ridgewood, N. J.
Gentlemen:
Please send me complete information right away on the new Marlow lightweight Mud Hog pumps.
Name .....
Company .....
Address .....
.....

MARLOW PUMPS RIDGEWOOD NEW JERSEY
WORLD'S LARGEST LINE OF CONTRACTORS' PUMPS

"PERFORM WELL in

On short 350' haul, 2 D Tournapulls move 50 LOADS PER HOUR

Arthur Cushing — Frank Converse, owners of The Great Lakes Construction Company in Cleveland, Ohio, had a 25,000-yard contract to widen and straighten 2 miles of Cleveland's heavily-traveled Lake Shore Highway (State 283). Open traffic had to be maintained at all times, even though most of the scattered cuts and fills required hauls across the existing pavement or next to it.

Contractors Cushing and Converse needed a fast, mobile, medium-sized dirtmover for lowest cost operation on this task. Their LeTourneau Distributor had the answer . . . two 28 m.p.h., rubber-tired D Roadster Tournapulls.

"The D Roadsters set us ahead of schedule right from the start," says Cushing. "We like their performance in tight places and they fit right on the job." Rubber tires did not damage pavement and output was uniformly high. Check the record for yourself . . .

On typical, short 700' round trip . . . loading, traveling parallel to existing highway over rough haul road, spreading, and returning up 12% grade out of fill . . . each Tournapull completed the cycle in slightly more than 2 minutes, delivered 23 loads an hour. Material was mostly sandy topsoil. Average hourly production for each Roadster, as measured on a 2-hour time study and checked against contractors' own figures, was 137.5 pay yards . . . combined output for the 2 high-speed, rubber-tired rigs was 275 pay yards hourly.

Widen road 14 to 16 feet

When the picture above was taken, the "D's" were "daylighting" a sharp curve just east of Cleveland. Later, they widened both sides of the route 7 to 8 ft. . . . built shoulders all along the 2-mile construction section . . . and finished the sub-grade for surfacing.

Consider what this high-speed versatility and mobility can mean on your dirtmoving. Get all the facts . . . write or ask your LeTourneau Distributor about 28 m.p.h. D Roadster Tournapulls TODAY.

Mail Today

To: R. G. LeTOURNEAU, Inc., Peoria, Illinois

Please send ☐ Specifications ☐ Price ☐ Job performance reports on 7-yd., 28 m.p.h. D Tournapull

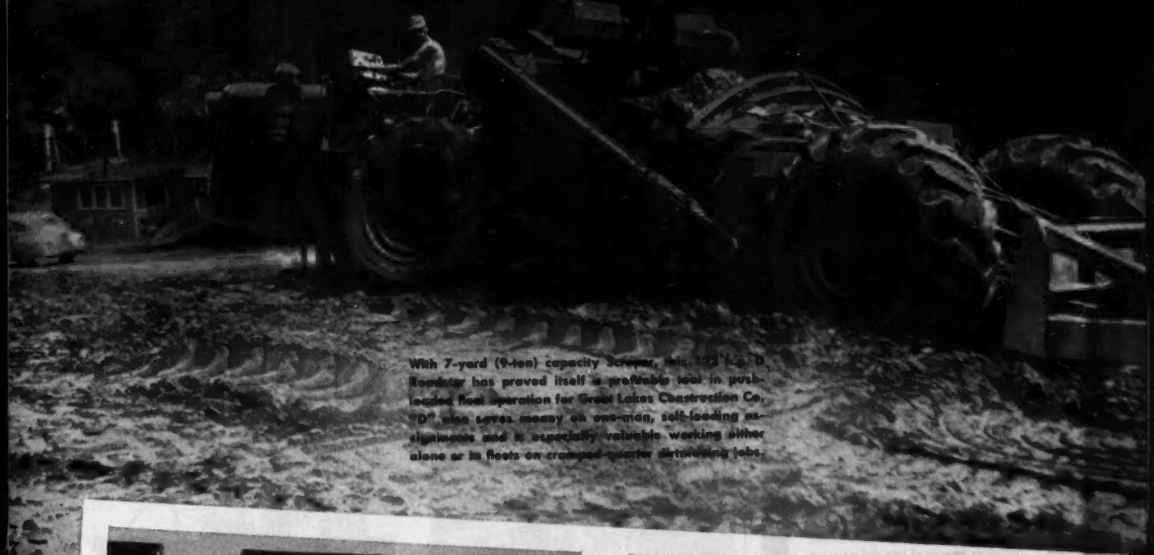
NAME _____ TITLE _____

COMPANY _____

STREET _____ CITY, STATE _____

Type of work to be handled _____

TIGHT PLACES..."



With 7-yard (9-ton) capacity Scraper, this 144 h.p. D Roadster has proved itself a profitable tool in push-loaded fleet operation for Great Lakes Construction Co. "D" also saves money on one-man, self-loading assignments and is especially valuable working either alone or in fleets on cramped-quarter dirt-moving jobs.

Wm. Cinader replaces shovel and 3 trucks with one D Tournapull

Contractor William Cinader used his D Roadster for 25,000 yards grading streets and leveling for 500-home subdivision at Royal Oak, Michigan. He says, "Roadster eliminated 3 to 4 trucks and ⅝-yd. shovel plus one grade foreman. Operator carries own grade, keeps ahead of gravel trucks. We cut costs . . . got more production . . . more profit . . . had less worry." Self-loading to grade, dumping in highly restricted quarters among houses and basements, on hauls from 300 to 500', the "D" averaged 20 trips per hour, carries 6½ loose yards. On 4 jobs in 3 months, mostly 7-day weeks, Cinader reports "not one minute of downtime for the Tournapull."

Noel Brothers cut costs 20% on warehouse grading in Tennessee

Grading for a new tobacco warehouse at Greeneville, Tenn. required loading and dumping in narrow lanes between foundation walls and supporting columns. Noel Brothers kept very accurate cost and time studies of all their equipment on this job. These records show their push-loaded D Roadster outhauled their 144 h.p. tractor and LP Carryall by 25 yards per hour . . . moved dirt 20% cheaper. From here, the "D" was used on a heavy work schedule of other small-yardage grading jobs. The rubber-tired Roadster drove at high speeds over main highways from job to job, saved about 30% of the costs of moving crawler-scraper equipment.

Tournapull, Carryall—Trademark Reg. U.S. Pat. Off. 87514

LETOURNEAU JOB-PROVED TOURNAPULLS

FOR LOWEST NET COST PER YARD

WORLD'S FOREMOST "SHAKE-DOWN ARTIST" GETS

Greater Soil Compaction

IN TWO PASSES—THAN 25 TON ROLLER ATTAINS IN EIGHT!

The Vibro-Plus Vibratory Soil Compactor type MRJ-6. It weighs only 1.6 tons. Vibrating 950 times per minute, it effectively compacts up to 2,000 sq. ft. per hour under its own power, penetrating as deeply as 40 inches. Towed by tractor, it accomplishes about four times more work.

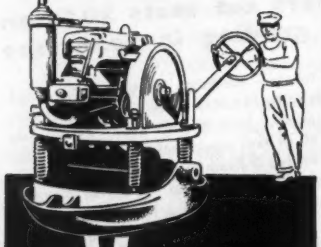
Useful where larger equipment can't go—on open areas, too, it convincingly outperforms other equipment—achieving up to 97.2% of absolute compaction in only 2 passes, compared to 94.2% in 8 passes with a 25-ton rubber-tired roller; 95.6% in 6 passes with an ordinary 12-ton roller; 96.2% in 6 passes with a 7-ton vibratory roller.

You easily can figure how this favorably-priced Vibro-Plus equipment will save impressive amounts of time and money on your jobs. Write for complete facts and name of nearest distributor.

Driven by a 10 H. P. diesel engine, the MRJ-6 is recommended for compacting roads, railway embankments, backfills earth dams, airfields, soil under floors and foundations, etc.

One man can "walk" this Vibro-Plus Compactor or it can be towed by tractor. The 65" x 45-5/16" base is steered by turning the steering wheel. Rubber-tired wheels attach easily for transportation.

VIBRO-PLUS Soil Compactor—one of the complete line made by the pioneers in vibrating and compacting



VIBRO-PLUS PRODUCTS, INC.

54-11 QUEENS BOULEVARD
WOODSIDE, L. I., NEW YORK

DOUBLE-REDUCTION REAR AXLE—Heavy-duty 2-speed hypoid-helical double-reduction rear axle makes possible the use of powerful engines and transmissions in short-wheelbase truck-tractors. Arrangement of internal gearing provides top-mounting of the final drive unit. One of the principal features of the R-330 axles is reduction of the distance from centerline of the axle to the end of the hypoid pinion, permitting use of the longest possible propeller shaft. Increased height of the drive pinion serves to straighten out drive line and aids in elimination of angles in the mounting of engine and transmission units. Use of the R-330 rear axle is limited to tractors where maximum load on the tires at the ground will not exceed 18,000 lb—rated capacity of four 11:00x20 tires.—**The Timken-Detroit Axle Co., Detroit 32, Mich.**

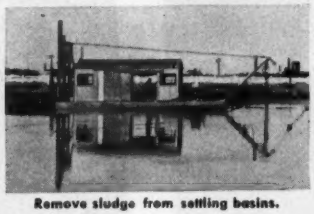
INK FOR COPY MACHINES—Actinic fountain pen inks for Ozalid, Bruning, and other copy machines are available in three colors—brown, green, and black. They are said to be more opaque under exposure to actinic lights and to produce strong, sharp copies. These inks are eradicable, and can be used in any fountain pen. — **Sanford Ink Co., Bellwood, Ill.**

Here's proof

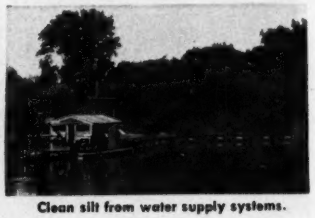
ELLICOTT Little Dragon® Dredges *are Versatile!*

Maintain and improve irrigation canals.

Convert marshes into valuable real estate.



Remove sludge from settling basins.



Clean silt from water supply systems.

LITTLE DRAGON hydraulic dredges are designed for a variety of jobs. As the four location pictures above show, they're ideal for constructing or improving canals, lakes, harbors and rivers . . . are equally efficient for providing fill for swamps, beaches and dams. These low-cost, standard Ellicott Little Dragons can deliver up to 150 yards of solids an hour, pump to 2000 feet and dredge to 20-foot depth.

And moving from job to job is no problem. Special sectional design makes Little Dragons easy to disassemble, load and move by truck, rail or water. At each new job site, sections are easily floated, bolted together and set up for operation. For full details on the versatile, low-cost Little Dragon, write today for Bulletin 804. ELLICOTT MACHINE CORP., 1605 Bush Street, Baltimore 30, Maryland.

ELLICOTT Builds Any Type, Any Size, Any Service

No matter what your dredging problem, Ellicott builds the type and size dredge to handle it efficiently. Only Ellicott offers 66 years' experience in dredge building; a complete line; undivided responsibility—your dredge designed, built and delivered under one contract.

ELLICOTT HYDRAULIC DREDGES

NEW EQUIPMENT BRIEFS

Plug-in humidity controller is an automatic control for operating electrically powered units. It is designed to be plugged in directly to a wall outlet. Made by: Abbeon Supply Co., Woodside, New York, N. Y.

Air-entraining agent in liquid form is available in 5-gal pails or 55- gal. drums. It is added at the mixer with the water. Air-Crete is produced by: Carter-Waters, Kansas City 8, Mo.

Soil-testing unit consists of a tamper, mold, collar remover, and sample ejector. Made by: Soil Testing Services, Inc., Chicago 22, Ill.

Dust collector, powered by a 3-hp motor, has a 9-ft roll-away bin. Suction capacity of the 20B30 is 2,405 cfm on a 7-in. pipe. Maker: Aget-Detroit Co., Ann Arbor, Mich.

Pressurized fire extinguisher discharges a vaporizing liquid. Requires no pumping, can be one-hand-operated, has a 1-qt capacity, aims like a gun, and has a trigger-type action. Maker: American-LaFrance-Foamite Corp., Elmira, N. Y.

Neoprene-coated canvas gloves are said to be especially useful in handling wet articles. Made by: The Pioneer Rubber Co., Willard, Ohio.

Flexible tubing of stainless steel is available for use where extreme temperatures and corrosion are factors. Developed by: Allied Metal Hose Co., Long Island City 1, N. Y.

Glasses-cleaning tissues are interfolded for handling in a simple dispenser. Magic Lens tissues are silicone treated. Produced by: The Silicone Paper Co. of America, Inc., New York 17, N. Y.

Brush-applied steel coating is fire resistant, will not burn, crack or peel. Metl-Kote is a product of: Corrosion Engineering Co., Houston 6, Tex..

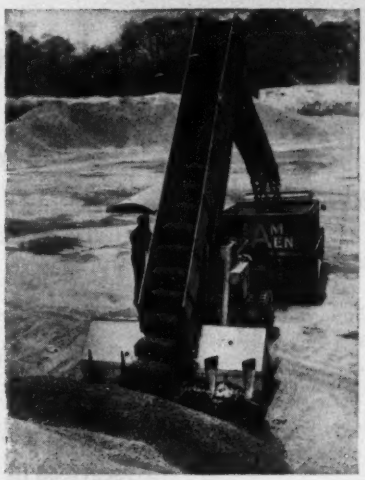
Haydite blocks have a tinted thermal-setting plastic baked to one side, permitting construction of colored walls without lathing, plastering, painting, or wallpapering. Spectra-Glaze blocks are produced by: Alton Brick Co., St. Louis 8, Mo.

Prefabricated ranch house features low-pitched roof, wide, overhanging eaves, sweeping horizontal lines and large picture windows. Made by: Gunnison Homes, Inc., Subs. United States Steel Co., New York, N. Y.

Aluminum paint is capable of withstanding temperatures to 1,700-deg. Heat-Rem H-170 utilizes a silicone base. Produced by: Speco, Inc., Cleveland 9, Ohio.

HAISS Material Handling

BUCKET LOADERS



FOUR MODELS

Load 3 to 8 Yards per min.

SELF-PROPELLED

SELF-FEEDING

For loading: sand, gravel, stone, topsoil, coal, snow and similar materials. One man operation, wheel or crawler mounted. Furnished with swivel chute or with swivel belt conveyor.

Special new features include: Sealed anti-friction bearings on head and tail shafts, two or four wheel drive, hydraulic raising and lowering, manganese or roller chain.

HAISS CONVEYORS

CAR UNLOADERS

FLAT and TROUGH BELT CONVEYORS

For handling all types of loose or package materials. Mounted on "V" or mast truck with swivel wheels or for permanent installation.

UNDERCAR UNLOADERS

Designed and built especially for loading sand, gravel, and crushed stone. Combination belt and positive chain drive. Capacity up to 5 tons per minute. Ask for Bulletin No. 501.

SECTIONAL CONVEYORS

Channel or Lattice Frame construction. Made in easily assembled standard sections for permanent or portable installation. All sizes and capacities available for handling all types of aggregates as well as bagged or packaged materials.

For further information write, 'phone or wire. Experienced Haiss Representatives are located in all principal cities.

GEORGE HAISS MFG. CO., INC. division of PETTIBONE MULLIKEN CORP.

141st to 144th St. on Park Ave., New York 51, N. Y. 'Phone Mott Haven 5-2200

4700 W. Division St., Chicago 51, Ill. 'Phone Spaulding 2-9300

HYSTER...One of the Oldest Names in Tractor Equipment

29 Hyster Tractor Tools

. . . include a complete line of winches, yarders, donkeys, cranes, logging arches and sulkies; Grid Roller for bituminous road salvage; and Hystaway, the 5 in 1 tool that includes dragline, clamshell, crane, shovel and backhoe.

Hyster Tractor Tools make money for their owners in construction, logging, oil fields, road work, and in many branches of general industry.

For 22 years Hyster has made tractor tools for use with Caterpillar track-type tractors. Mounted on the big yellow machines, dependable Hyster tractor tools are at work on the roughest, toughest jobs all over the world.

Hyster tractor tools are sold and serviced by more than 400 Caterpillar-Hyster dealers around the globe.

The Grid Roller, Hyster's newest tractor tool, which is revolutionizing bituminous road salvage. Used with Caterpillar motor graders and Caterpillar DW10 and track-type tractors.

HYSTER® COMPANY

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1821 NORTH ADAMS STREET, PEORIA 1, ILLINOIS

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

HEAVY-DUTY DIESEL TRACTORS—Two 16-p catalogs describe the Model HD-9 and the Model HD-15 diesel crawler tractors. Each catalog utilizes double-page spreads to discuss major features such as unit construction, GM 2-cycle diesel power, complete power train, frame and track design, simplicity of operation, and ease of maintenance. Both make extensive use of large illustrations of the two units and their components. Complete specifications, plus details of allied equipment and special accessories, are also included.—**Allis-Chalmers Mfg. Co., Tractor Div., Box 512, Milwaukee, Wis.**

PORTABLE TOOLS—Complete specifications for a line of portable tools are presented in this 4-p condensed catalog. Tools listed include drills, saws, and disk sanders. Accessories include saw blades, abrasive wheels, grinding wheels, wire brushes, backing pads, and a rotary planer head mountable on the sander spindle.—**Cummins Portable Tools, Div. of Cummins-Chicago Corp., 4740 N. Ravenswood Ave., Chicago 40, Ill.**

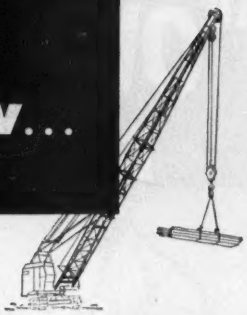
LIGHTWEIGHT PIPE — Bulletin shows typical applications of Lockseam Spiralweld pipe. It includes data on fittings, flanges, connections, and pipe specifications from 4 to 40 in. dia.—**Naylor Pipe Co., 1230 E. 92nd St., Chicago 19, Ill.**

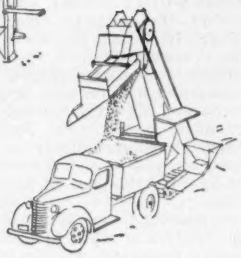
STOCKPILE PROTECTION — Informative folder describes the use of Sisalkraft for stockpile protection. Of a timely nature, it is especially concerned with the protection of abrasives for ice control.—**The Sisalkraft Co., 205 W. Wacker Drive, Chicago 6, Ill.**

DITCHERS—Folder describes the Model 705-A Runabout service ditcher. A special feature of this bulletin is a table describing six typical tile and pipe types and diameters, matching these specifications with the digging widths (5½, 7½ and 10½ in.) available with the Runabout. Also described in detail is the Hydracrowd hydraulic transmission that provides an infinite range of digging speeds to 16 fpm and bucket-line speeds of 380, 649, and 1,152 fpm. All other features of the Runabout are fully described and illustrated.—**Barber-Greene Co., Aurora, Ill.**

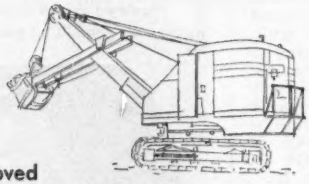
Truly Versatile..
AN OWEN BUCKET
Rapid excavation in all types of soils with "A" Mouthful at Every Bite."
Owens "lend a hand" in tearing down as well as cleaning up on demolition jobs.
Tremendous closing power is graphically illustrated in this rock handling operation.
Even steel girders cannot escape the firm grasp of an "Owen."
More than just buckets, "Owens" are Versatile Tools, earning their way, every day on jobs of widely varying nature.
Sound principles of design and rugged construction are paying dividends to Owen owners everywhere. Write for the catalog.
"A mouthful at every bite"
Old iron by the dozens are handled with ease by versatile "Owens."
THE OWEN BUCKET CO.
6020 Breakwater Avenue, Cleveland, Ohio

do you know...





...that you have the best, if your construction machinery is driven by Rex Chabelco Steel Chain?



It's true . . . and it's proved by the outstanding dependability and performance of this heavy duty, high strength chain. Makers of all types of construction equipment—shovels, loaders, cranes, mixers, pavers and many others—specify Rex Chabelco for only one reason: they know from experience that Rex assures them most years of trouble-free service at lowest overall cost.

You'll get added performance from your machines by insisting on Rex Chabelco for the heavy jobs of power transmission.
Chain Belt Company, 1664 W. Bruce St., Milwaukee 4, Wis.

CHAIN BELT REX COMPANY ®

CHAINS AND SPROCKETS

CHAIN BELT DISTRICT SALES OFFICES

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Birmingham	Denver	Louisville	Portland
Boston	Detroit	Midland	St. Louis
Buffalo	Houston	Milwaukee	San Francisco
Chicago	Indianapolis	Minneapolis	Seattle
Cincinnati	Jacksonville	New York	Springfield
Cleveland	Kansas City	Philadelphia	Tulsa

▲ Finished bridge approach takes shape as screed smooths the concrete over Bethlehem Bar Mats. Float finish already applied behind screed.

Road Improvement in Bucks County, Pa.

A recent road-improvement project authorized by the Pennsylvania Department of Highways involved the construction of a bridge, plus approaches, on Route 178, near Doylestown, Pa. These on-the-job photographs show various phases of construction of the approaches and the bridge itself. Contractor: J. D. Eckman, Atglen, Pa. Bridge reinforcing, bar mats and dowel units were furnished by Bethlehem.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

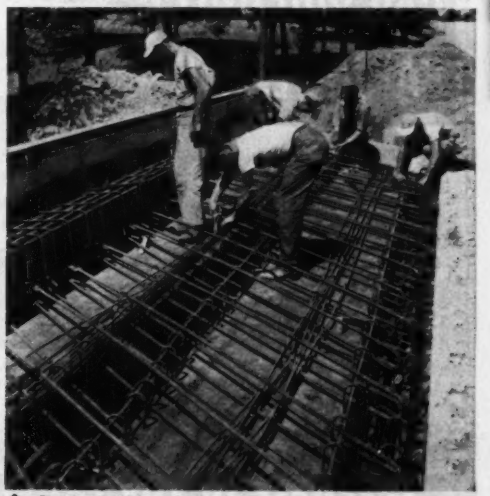
BETHLEHEM STEEL

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail
Guard Rail Posts • Wire Rope and Strand • Pipe
Hollow Drill Steel • Spikes • Bolts and Nuts
Timber Bridge Hardware • Tie-Rods
Sheet- and H-Piling • Fabricated Structural Steel

▲ Placing Bethlehem Hinged Bar Mat over first course. The hinged portion of mat folds over double. Mat can be handled easily by two men.

▲ Scraper moves into position for finished grading. At right background, paving proceeds at fast pace. Note finished lane, left of scraper.

▲ Workers place Bethlehem Dowel Unit. The unit is designed to keep dowels accurately aligned in concrete, both horizontally and vertically.



▲ Showing Bethlehem Reinforcing Bars being tied, prior to pouring concrete for bridge. Bars have high lugs to prevent slippage in concrete.

WATER-WELL SYSTEMS — Forty-eight-page catalog contains photographs and drawings illustrating the Layne methods of drilling deep water wells. Subjects covered are underreamed gravel wall wells, rock wells, and special drilling, such as core sampling for foundation soundings. The booklet also shows applications of Layne shutter screens and Layne pumps. Water conditioning section completes a story of the scope of Layne service. Useful engineering tables are included.—**Layne & Bowler, Inc., Memphis 8, Tenn.**

DRAINAGE INSTALLATION — Illustrated 46-p manual covers installation of Armco drainage products. It is intended to assist construction engineers, superintendents, and foremen in the proper methods of installing drainage structures, culverts, sewers, or conduits. The manual discusses: Proper handling of drainage products; location; proper excavation and preparation of base in various types of foundation soils and rock. Also listed are recommendations for proper backfilling.—**Armco Drainage & Metal Products, Inc., Middletown, Ohio.**

OPEN-STEEL FLOORING—Catalog describes various types of open-steel flooring and armoring. Catalog 1103 discusses different types of Tri-Lok products listing specification data, safe-load tables, installation methods, and other pertinent information. Also included is a description of T-Tri-Lok flooring—an assembly of Tee bars which can be filled with concrete to produce a heavy concrete flooring with reduced dead load.—**Dravo Corp., national distributors, Machinery Div., National Dept., 5th & Liberty Aves., Pittsburgh 22, Pa.**

HYDRAULIC DOZERS—Bulldozers, Gradebuilders, and root rippers for Allis-Chalmers' tractors are described in Engineering Bulletin 894. Design and performance characteristics are described in detail. Features listed include direct lift, positive down pressure, mobile moldboard, fingertip control, positive hydraulic hold, and easy engine accessibility. Complete specifications are listed.—**The Baker Mfg. Co., Springfield, Ill.**

BEARING MAINTENANCE—Techniques and successful maintenance, installation, and removal procedures for successful bearing operation are listed in a new pamphlet. This is the first of a series and is supplied with a file-folder type of binder for inserting succeeding issues. Purpose of this series to help eliminate faulty maintenance practices, and to reduce the replacement of bearings for reasons other than normal fatigue. The pamphlet contains a photograph showing the various symptoms of faulty bearings, lists the causes, and contains hints on how to correct the fault.—**Anti-Friction Bearing Distributors Assn., 1900 Euclid Ave., Cleveland 15, Ohio.**

CRANE-EXCAVATORS — Fourteen-page catalog describes the heavy-duty line of Wayne ½-yd. crane-excavators. Features of all three models (crawler, truck, and wagon) are shown. These include deck-machinery layout, self-leveling chassis, oversize 20-in. clutches, large modern cab, and right-angle drive mechanism. Lifting capacities range from 8 to 12½ tons. Each model is convertible to all front-end attachments. Gasoline or diesel power is optional. Complete specifications and operating data are included. — **Wayne Crane Div., American Steel Dredge Co., Inc., Fort Wayne, Ind.**

ALUMINUM DATA BOOK—Factual information on aluminum alloy and mill products is contained in this 194-p data book. Data listed cover alloys, tempers, sizes, shapes, physical properties, chemical properties, mechanical properties, and fabricating characteristics. The manual contains 117 tables, 33 pages of explanatory text, 61 illustrations, and a condensed table of contents on the title page to indicate where to look for detailed information on specific subjects.—**Reynolds Metals Co., 2500 S. 3rd St., Louisville, Ky.**

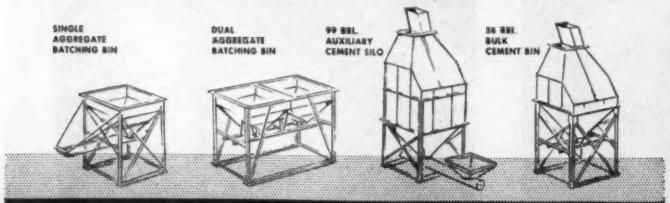
To solve any storage problem

Put the pieces together

GAR-BRO UNIT BATCH PLANTS

ASSEMBLE THE UNITS in any combination to meet your batching or storage requirements. They're engineered to handle aggregate and/or bulk cement and are easily re-arranged for use on the next job. Double-rail tracks on each unit lock together and carry the traveling weigh hopper equipped with multiple-beam scale. Weigh hopper is adjustable to discharge from either side or either end. Write for bulletin.

GAR-BRO MANUFACTURING CO., 2416 East 16th Street, Los Angeles 21



ASSEMBLE IN ANY COMBINATION

FORD TRUCK ECONOMY RUN

OKLAHOMA
Report No. 2703

On Bottom Land or Concrete Highways—

"My 2-ton dump hauls tough loads for only 3½¢ a mile"

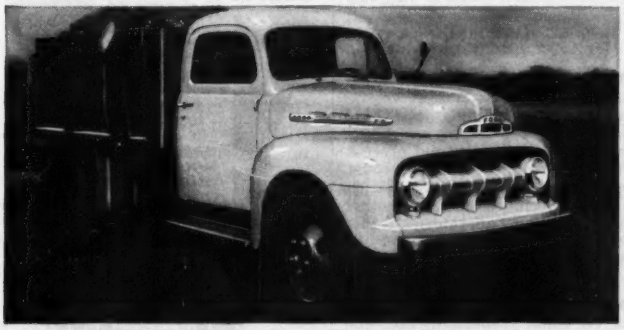
—Says **L. C. CLINGAN,**
Sand and Gravel Operator, Lawton, Oklahoma

He drove a 1950 Ford F-6 Dump in Ford's nationwide Economy Run. He says, "I proved for myself that Fords are economical to run. They carry more load on less gas."

Low cost hauling brightens the profit picture on any construction job. And L. C. Clingan, who owns three Ford Trucks and kept cost records in Ford's Economy Run, says—"In six months, I hauled sand and gravel on my F-6 a total of 25,271 miles, making 1,566 stops. Average load was 13,500 lbs. The total spent for gas, oil and service was $882.49—or 3.49 cents per mile."

Like others who rely on Ford to handle tough loads at low cost, you'll also appreciate the money-saving Ford Dealer *service*. And, for more facts on the trucks that last longer and save you money every mile—mail the attached coupon.

On the job every day, Clingan's trucks help keep ready-mix concrete plants operating on schedule. He says, "My Ford Trucks deliver more loads by making three extra trips in a day. I get more work done per dollar."



This new Ford F-6 Dump for '51, like Clingan's truck, is built to fit your power needs. Choice of 95-h.p. Six, 100-h.p. V-8 or 110-h.p. Big Six. Three wheelbases—134, 158 and 176 in. And remember, there's an economical Ford Truck to fit *your* job—over 180 models to choose from.

Ford Trucking Costs Less Because—
FORD TRUCKS LAST LONGER

Using latest registration data on 6,592,000 trucks, life insurance experts prove Ford Trucks last longer!

POWER PILOT
helps
CONSTRUCTION MEN
hold down hauling costs

The Ford Truck Power Pilot is a simpler, fully-proven way of getting the most power from the least gas. It automatically meters and fires the right amount of gas, at precisely the right instant, to match constantly changing speed, load and power requirements.

Unlike conventional systems, the Power Pilot uses one control instead of two, yet is designed to synchronize firing twice as accurately. You can use regular gas . . . you get no-knock performance. Only Ford in the low-price field gives you Power Pilot Economy!

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3250 Schaefer Rd., Dearborn, Mich.

Send me without charge or obligation, detail specifications on Ford Trucks for 1951.

Full Line ☐ **Heavy Duty Models** ☐
Light Models ☐ **Extra Heavy Duty Models** ☐

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TRENCH BRACES

For sure protection against cave-ins, injuries and costly re-digging, specify Simplex Trench Braces. Constructed entirely of steel drop forgings, with ball and socket joints, at each end to ensure quick adjustment and tight grip at all angles. Adaptable to any width trench. Sold with or without pipe in a complete range of sizes.

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Simplex LEVER · SCREW · HYDRAULIC Jacks

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1008 South Central Avenue

Chicago 44, Illinois

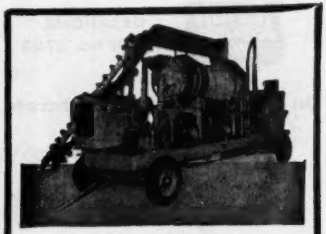
DRAG SCRAPER BUCKETS—Crescent buckets for a wide variety of drag-scraper operations are illustrated and described in Section J-1 of the Sauerman general catalog. Both standard types and special designs are included. Each bucket is illustrated. Specifications listed cover size of bucket, size of wedge sockets, and approximate weight. Use of these buckets with boom machines and with tractors is described in detail. The catalog is replete with on-the-job photographs showing typical drag-scraper applications. — **Sauerman Bros., Inc., 532 S. Clinton St., Chicago 7, Ill.**

VINYL-PLASTIC COATINGS—Bulletin describes a line of coatings for control of corrosion on exteriors of steel, concrete, brick, formed block, plywood, and tank linings. Specific properties are listed; a chemical-resistance chart is included; and information is supplied on applications. These coatings have a thermoplastic resin base, are inert and non-contaminating, and will stand up under extreme conditions.—**Casey & Case Coating Co., P. O. Box 151, Maywood, Calif.**

BITUMULS FOR AIRFIELDS—Information on airfield planning, construction, paving, and maintenance is contained in this descriptive folder. This booklet is not intended as a construction manual. Subjects listed include: Location and planning; mixtures; surface treatments and paving; uses of bitumuls; improvements; and C. A. A. airport design standards and construction specification references. Detailed data on construction is contained in the "Bitumuls Handbook" and other manuals available from the company.—East of the Rockies: **American Bitumuls Co.**; West of the Rockies: **Stancal Asphalt & Bitumuls Co.** Both companies are located at: **200 Bush St., San Francisco 4, Calif.**

MAINTENANCE CHECKING CHART— Products for successful maintenance of buildings are listed in a complete chart. This chart lists more than 100 products and processes for maintenance of floors, roofs, interior and exterior walls, waterproofing, special paints, and other data. — **United Laboratories, Inc., 16801 Euclid Ave., Cleveland 12, Ohio.**

SLING CHAINS—Safety rules and data on chain inspection, use, and care are listed in Bulletin SC-48. Recommended load limits are set down in detail for various chain sizes and suspension angles. Single and double sling-chain specifications are presented in tabular form. — **Cleveland Chain & Mfg. Co., Broadway Ave. & Henry, Cleveland 5, Ohio.**



ASPHALT PLANTS

Complete units for maintenance and moderate contract paving. Sizes—4, 8, 15, 30 tons per hour.

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Gasoline Engine and Electric Motor Driven Models

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FRONT END LOADERS

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ELKHART INDIANA

BLADES

AND CUTTING EDGES

of Superior Quality by

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For all makes and types of road building and road maintaining machines. Also —

BULLDOZER BLADES
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PATENTED SCARIFIER and ICE and SNOW REMOVAL BLADES
MOLDBOARDS
SCARIFIER TEETH

All widths, lengths, and thicknesses; accurately punched to fit your make of machine.

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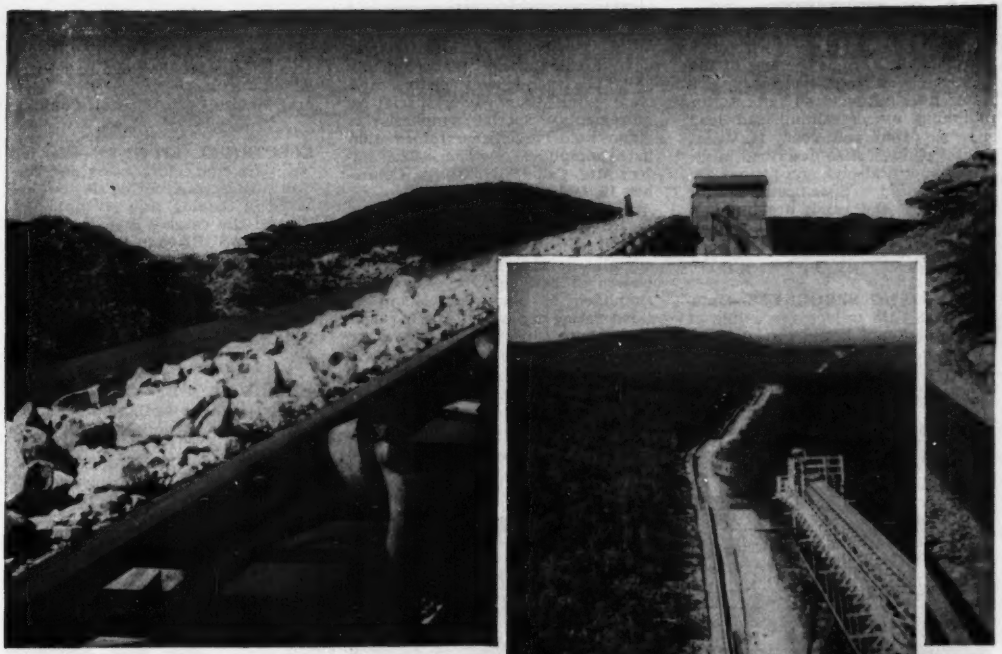
Established 1854

BUCYRUS, OHIO.



ROAD BED... NEW STYLE!

Here's the latest style in "road beds" to carry construction materials from their source to the job!

This road bed—a Hewitt-Robins Belt Conveyor—will transport those materials far more efficiently, more economically. For, with a Hewitt-Robins Belt Conveyor, no roads need be built (except for maintenance). No tracks need be laid. No expensive trucks need be bought, manned or maintained.

Grades can be mastered. Rivers, roads, and valleys can be bridged. When tunnels are inevitable, you provide a passage, not a highway!

Sound interesting? Then let's talk facts and figures. Send us the details of any project you have now, or intend to bid on. Include topographical maps. We will show you how conveyorizing may be more efficient, more dependable, more economical . . . a way to get jobs, a way to make more money on the jobs you do get. Write Contractor Service Department, Robins Conveyors Division, 270 Passaic Avenue, Passaic, N. J.

As originators of the modern belt conveyor, Hewitt-Robins makes *all* types—Hewitt-Robins alone makes *all the parts* . . . machinery and belt. And *only* Hewitt-Robins is able and willing to take complete, unified responsibility for design, installation and successful operation!

HEWITT-ROBINS
BELT CONVEYORS

HEWITT-ROBINS (HR) **INCORPORATED**

BELT CONVEYORS *(belting and machinery)* • BELT AND BUCKET ELEVATORS • CAR SHAKEOUTS • DEWATERIZERS • FEEDERS • FOAM RUBBER PRODUCTS • FOUNDRY SHAKEOUTS • INDUSTRIAL HOSE • MINE CONVEYORS • MOLDED RUBBER GOODS • RUBBERLOKT ROTARY WIRE BRUSHES • SCREEN CLOTH • SKIP HOISTS • STACKERS • TRANSMISSION BELTING • VIBRATING CONVEYORS, FEEDERS AND SCREENS

LEAD IN PLUMBING — Why, where, and how to use lead in modern plumbing is subject of a 24-p booklet. Various sections of the booklet cover lead service pipe for water distribution, lead for interior plumbing, use of calking lead, lead shower pans, and lead for vent stack flashings. Also described in detail is how lead pipe and fittings are manufactured. Specifications for pipe, traps, and bends are listed in tabular form. — **Lead Industries Assn., 420 Lexington Ave., New York 17, N. Y.**

CHAINS AND SPROCKETS—Catalog A-418 (216 pp) covers a line of chains and sprockets for new or replacement service on elevating and conveying equipment, and for drives. Illustrated and described in detail are 22 types of standard malleable, steel, and alloy chains, and many types designed for special requirements. Special emphasis is given to drive chains. Information listed simplifies selection.—**The Jeffrey Mfg. Co., 923 N. 4th St., Columbus 16, Ohio.**

BALL BEARINGS—20th edition of New Departure's ball-bearing catalog contains several new features. Selection of bearing type and size is simplified by numerous examples. Load rating tables give both radial and thrust capacities. Speeds have been arranged to include those for synchronous motors. Several more types of single and double-row angular contact bearings have been added.—**New Departure Div., General Motors Corp., Bristol, Conn.**

ELECTRICAL FITTINGS — Solderless wire connectors, cable and conduit fittings, and wiring devices are listed in Catalog 1050 (12 pp). Feature of the catalog is a description of the pre-SURE-connector tool. Catalog contains complete specifications, dimensional data, application instructions, and ordering information. — **Buchanan Electrical Products Corp., 1290 Central Ave., Hillside, N. J.**

CARBIDE TOOLS—Catalog GT-250 (60 pp) contains complete information on the Carboloy line of carbide tools and parts. It tells how to select and apply these tools; lists the differences and limitations of various grades of carbide, and describes non-tool uses for carbides. A pictorial index divides the catalog into sections to simplify its use. Available technical literature is also listed and described.—**Carboloy Co., Inc., E. 8 Mile Road & Van Dyke, Detroit 32, Mich.**

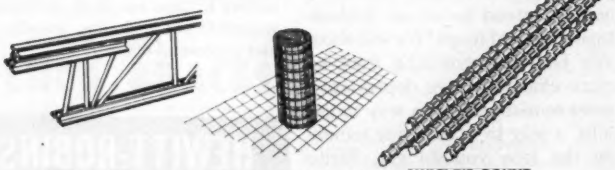
TAMPING ROLLERS—Medium and giant weight tamping rollers are described in a new folder. The medium-weight sheeps-foot "M" series has single, double or triple-drums. Foot pressures range from 108 to 315 psi. Foot surface areas of 5 or 7½ sq in. are available. The giant-weight "G" series has diamond-shaped feet in single and double-drum types. Foot pressures range from 296 to 740 psi. Foot lengths of 8 or 9½ in. can be obtained.—**Wm. Bros Boiler & Mfg. Co., 1057 Tenth Ave., S. E., Minneapolis 14, Minn.**

WOOD PRESERVATIVE—"Pointers on Penta" provides technical information on the use of penta pressure-treated wood. Booklet contains information to guide users on types of treatment to meet particular requirements. — **The Dow Chemical Co., Midland, Mich.**

WATER-LEVEL GAGES — Bulletin L700 describes instruments for measuring and recording water depth in reservoirs, elevated tanks, rivers, lakes, irrigation systems, flumes, weirs, etc. Several types of gages are listed, as are devices for measurement and automatic control of water and other liquids and solutions whether flowing, turbulent, under static pressure, or carrying solid matter. Bulletin also contains information on remote recording and remote automatic pump control of water level with Metameter telemetering instruments.—**The Bristol Co., Waterbury, Conn.**

THE SIGN OF QUALITY CONSTRUCTION

Carefully controlled from open hearth to finished product in the modern Laclede mills, these construction steels offer dependability of quality for your construction needs.



STEEL JOISTS
For strong . . . lightweight . . . economical construction. Spans to 40 feet.

WELDED WIRE FABRIC
Cold drawn, welded automatically . . . in rolls or sheets.

MULTI-RIB ROUND REINFORCING BARS
With Laclede improved design for maximum anchorage . . . and numbered to meet latest ASTM A305 Specifications.

Other Laclede quality construction steels: corrugated centering accessories • spirals • pipe and conduit.

LACLEDE STEEL COMPANY
St. Louis, Mo.

STOP, JOE! I'll Make That Cut In 5 SECONDS with my CLIPPER MASONRY SAW and make it perfect, too!

Yes, any cut—ON ANY MATERIAL—made in seconds and at amazing low cost. No material is lost from chipping or fractures. Imagine! —One operator and one saw will do the work of 15—or even 25 men equipped with hammers and chisels. And..

CLIPPER FREE TRIAL

Guarantees—ACTUAL TEST ON THE JOB—FULL SATISFACTION...NO OBLIGATION. The outstanding policy of FREE TRIAL has been in effect since Clipper invented the world's first masonry saw years ago. Try it now!

NINE MODELS TO CHOOSE FROM PRICED FROM $265.00

SOLD ONLY DIRECT FROM FACTORY TO USER

Any Material ...On Any Size Job

•••CUT WITH•••

CLIPPER MASONRY SAWS

PATENTED CLIPPER FEATURES

1. Makes your blades last longer...Because Equalizer Spring automatically cushions blade pressure whether cutting HARD or SOFT materials. Outstanding for blade economy.
2. One man easily adjusts Cutting Head to desired height... Whether cutting 12" or 1" material. Operator's hands merely guide. Weight supported by rear Bar.
3. Just turn the Save-A-Blade Dial to the material hardness and the pressure Equalizer Spring automatically sets the tension—guarantees faster cutting and longer blade life.
4. Pull the knob—and the Cutting Head is free for finger-tip setting at any desired angle. Release the Knob—and Head is locked in the desired position.

Even on the smallest masonry jobs a Clipper will pay for itself! Brick, Concrete Block, Glazed Tile, Natural Stone—regardless of hardness—they're cut with smooth simplicity. And with the MODEL HD you can choose your cutting method—cut Wet (DUSTLESS) in confined areas or switch to Dry for outside operations. Remember too, there are Nine Clipper Models designed for your job and cost problem.

5 MODELS— ELECTRIC or GASOLINE POWERED

FOR CUTTING CONCRETE or ASPHALT

STREETS, WALKS, BUILDING FLOORS

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Now Saw perfect edges... then break. Saw straight contraction joints—any length—with amazing ease. Clipper provides the 100% practical answer to the concrete cutting needs of Building Contractors, Highway and Street Departments, Utility Companies and Plant Maintenance.

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BELT FASTENERS

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- For joining grader, trencher, ditcher and other earth moving conveyor belts.
- For belts 3/16" to 1/2" thick.
- A FLEXCO fastener that is HINGED. Has removable hinge pin.
- Troughs naturally, operates through take-up pulleys.
- Strong, durable . . . pull or tension is distributed uniformly across joint.

Order From Your Supply House. Ask for Bulletin HF 500.

FLEXIBLE STEEL LACING CO. 4699 Lexington St., Chicago 44, Ill.

LIGHTWEIGHT AGGREGATES—Brochure on Permalite lightweight aggregates is separated into two main sections—one on Permalite plaster; the other on Permalite insulating concrete. Information is presented on advantages and uses, typical applications, and recommended mixes and applications. Technical data cover complete mix design information including materials required per yd, typical properties, and mix proportions by volume.—**Great Lakes Carbon Corp., Building Products Div., 18 E. 48th St., New York 17, N. Y.**

LONG-REACH CRANE, DRAGLINE—Manitowoc Model 3900 long-reach crane and dragline is described in a 12-p catalog. Machine is rated as a 3-yd dragline, with lift capacities of 60 tons at 12-ft radius and 30 tons at 30-ft radius. Bulletin lists complete working ranges and capacity tables. Pictures and test data illustrate features and machinery details. Gear diagrams and photos show optional equipment available for special jobs.—**Manitowoc Engineering Works, Manitowoc, Wis.**

LUBRICATION PRACTICES—Folder describes full line of Lubriko greases for anti-friction bearings. Folder gives use and application data for 25 different Lubriko densities ranging from liquid greases to heavy cup lubricants. Also given are facts on lubrication maintenance and selection of a lubricant.—**Master Lubricants Co., Meadow & Jackson Sts., Philadelphia, Pa.**

PACKAGED GENERATORS—Inside story of packaged generators (3.75 to 187 kva) is given in this 16-p catalog. Included in the bulletin are helpful information, charts, graphs, and illustrations to aid in the selection and application of generators. Also listed are power factor tables; charts for figuring wire and conduit sizes; current and power requirements of motors; voltage dip for a given horsepower motor; and information on how to figure motor requirements.—**Electric Machinery Mfg. Co., 1331 N. E. Tyler, Minneapolis 13, Minn.**

VIBRATING SCREENS — Concentric action vibrating screens for medium and heavy-duty service, accurate sizing, and rapid dewatering are illustrated, described, and tabulated in 12-p catalog. Bulletin 2354 explains CA's smooth, positive, circular motion and how its amplitude of vibration can be adjusted to eliminate blinding caused by sticky clays; to speed removal of fines from stones; or to insure sharp separation in sizing aggregates. Detailed dimensions, weights, and other engineering layout data are given. —**Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.**

"It's happened to me, too..."

"Ever have a masonry joint settle unevenly? Ever have trouble with mortar getting squeezed out by the weight of the bricks? It's happened to me—but not when I've used Marquette Masonry Cement.

"In this picture I'm showing you a column of bricks laid in five minutes using Marquette Masonry Cement. Notice how the joints are uniform from top to bottom? You see, mortar made with Marquette Masonry Cement has *body*. It's dependable mortar that can support the weight of course upon course of masonry units. It won't squeeze out of joints or permit uneven settling.

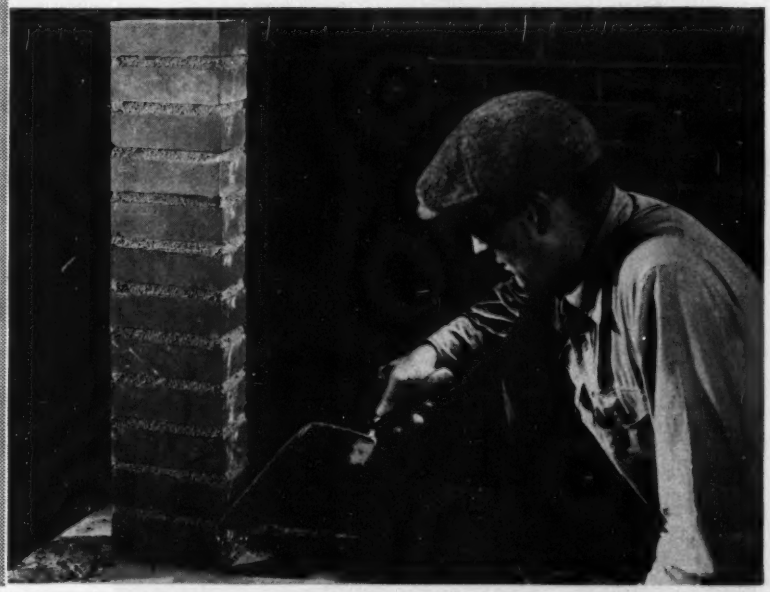
"I've found that I can always count on Marquette Masonry Cement to do a good, sturdy job. It makes better mortar in every way."—*George H. Smith, Jr., bricklayer for 34 years, member, Illinois Local No. 21.*

MARQUETTE Masonry CEMENT

The 10 basic requirements of high quality masonry cement*

1. Plasticity
2. Body
3. Strength
4. Yield
5. Color
6. Adhesion & Bond
7. Negligible Shrinkage
8. Water Retention
9. Water Repellency
10. Non-efflorescing

*You get all 10 when you use Marquette!



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PORTLAND • HIGH EARLY STRENGTH • AIR ENTRAINING • MASONRY

Any quantity of Marquette Masonry Cement will be shipped in mixed carloads with other types of Marquette Cement

Marquette Cements

JAHN *Heavy Duty* TRAILERS

FROM 5 TONS TO 100 —

YOU CAN DEPEND ON THESE HEAVY DUTY FEATURES

- Easily loaded
- Extra strong gooseneck
- Rigid cross-bracing
- Electrically welded

WHETHER your load weighs 5 tons or 100, you can depend on a Jahn Trailer for fast, safe transportation to your next job. They're famous for the rugged construction that means strength and stamina under the toughest conditions. Smooth, reliable, equalized brakes provide that extra margin of safety.

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Pressed Steel Car Company, Inc.
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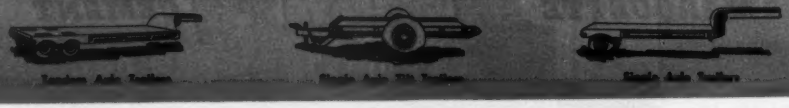
THERE'S A JAHN TRAILER FOR EVERY HAULING NEED



Parmanco

HI-SPEED HORIZONTAL
DRILLS

New Traction Drive with Forward and Reverse

THIS UNIT IS DELIVERING *6-inch shot-holes* *READY FOR LOADING*

at better than TWO FEET A MINUTE!!

The new Parmanco Hi-Speed Horizontal Drill is completely redesigned around a 40 h. p. engine with four drilling speeds which, in field tests, has cut one-third off the footage drilling time — a cost-per-drilling-foot saving that we are passing on to the strip mine operator and contractor at no increase in our price. In addition, the drill is equipped with a starter and generator, dual type front wheels, truck type rear axle with mechanical brakes and a traction drive with both forward and reverse.

• *For both Mines and Construction*

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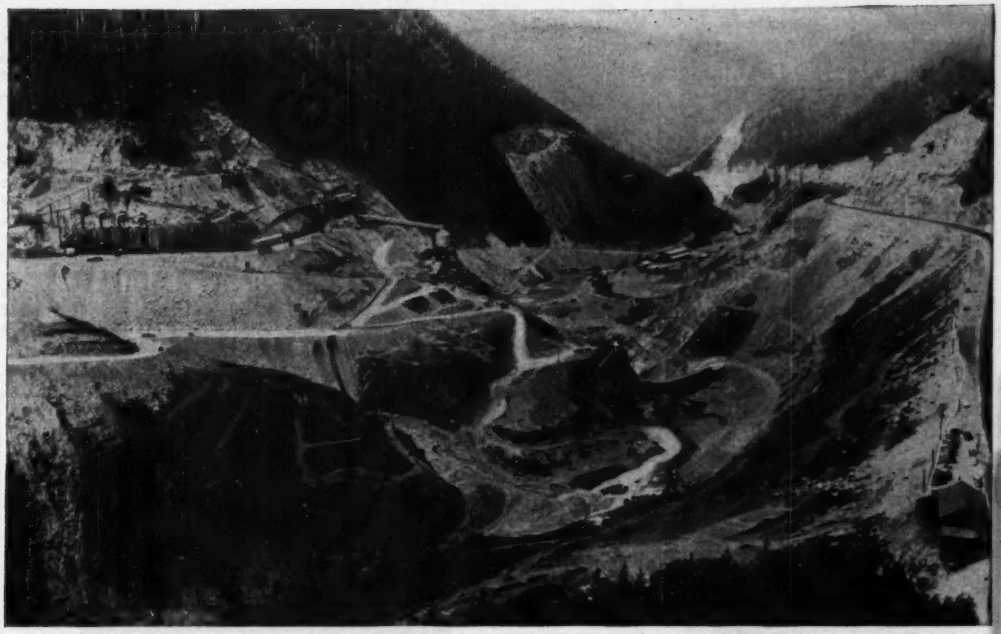


Amidst breathtaking scenery, Detroit Dam will span this rocky gorge of the North Santiam. The river is now diverted just upstream from the dam site.
Official Corps of Engineers Photo.

DETROIT DAM TO SUPPLY POWER, TAME FLOODS ON OREGON'S NORTH SANTIAM RIVER

Detroit Dam will add another vital link to the chain of hydroelectric power plants in the Northwest Power Pool to which Bonneville and Grand Coulee Dams are now the major contributors. Located 100 highway miles south of Portland, Detroit Dam will be of the concrete gravity type, 1580 ft long, and will create an eight-mile-long reservoir.

Excess water will be stored during critical run-off periods, reducing flood stages on the picturesque North Santiam River. Two generating units will feed 100,000 kw to this power-hungry region when the dam is completed in 1953. Big Cliff Dam, a smaller installation, will be built about three miles downstream from Detroit Dam. In addition to supplying power and controlling floods, these structures will function in the interests of irrigation, navigation, pollution abatement and recreational development.

The entire Detroit Project is under the supervision of the Corps of Engineers, U. S. Army, Portland District. Consolidated Builders, Inc., Portland, is the prime contractor on Detroit Dam.

Bethlehem Hollow Drill Steel bites into rock as these wagon drills go into action at a nearby quarry which supplies aggregate for Detroit Dam.

Large quantities of Bethlehem Hollow Drill Steel are being used to quarry aggregate from the rugged hills near by. And at the construction site, where 800,000 cu yd of excavation is under way, this drill steel is on the job, boring tough bedrock day after day.

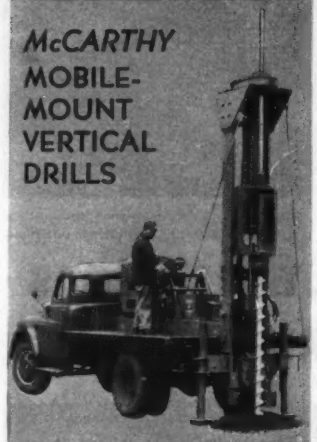
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM HOLLOW DRILL STEEL ★ BETHLEHEM STEEL ★

EQUIP NOW
EASIER-FASTER
BLAST HOLE
Drilling

McCARTHY
MOBILE-MOUNT
VERTICAL
DRILLS



● You're set to drill all ordinary rock formations when you're equipped with mobile-mounted McCarthy Vertical Drills. These heavy, rugged McCarthy units are compactly designed for truck, half-track, cat or "Jumbo" mountings. They're easy to move about, easy to set up. They're equipped with finger-tip hydraulic controls; your choice of electric, diesel or gasoline power units.

Recently, on one difficult job, workers using McCarthy equipment drilled an 8-inch hole 100 feet deep in only 40 minutes!

Write today for full facts about McCarthy Drills. See for yourself how you save valuable time on the job by using a McCarthy—the toughest, fastest, most efficient unit ever made.

DRILLING EQUIPMENT SINCE 1901

SALEM

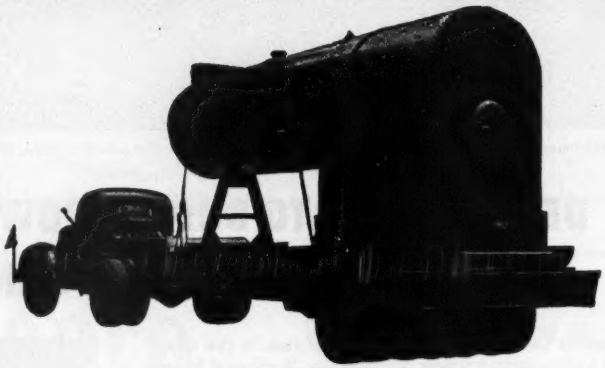
THE SALEM TOOL CO.
765 SOUTH ELLSWORTH AVE.
SALEM, OHIO, U. S. A.

NON - DESTRUCTIVE METAL TESTING—Bulletin 500 fully describes a dye-penetrant method of metal inspection. It explains how this chemical process simplifies testing of metal parts; explains how to run a test; and lists several applications of the process.—**Northrop Aircraft, Inc., Dy-Chek Co. Division, 1515 E. Broadway, Hawthorne, Calif.**

PORTABLE TOOLS—Seventy-two-page Skil catalog lists over 135 electric and pneumatic tools. Catalog includes complete specifications and features, applications, uses of Skil saws, drills, sanders and other types of portable power tools. Catalog features large, easy-to-read type, detailed product photographs, individual tool sections and clear indexing—**Skilsaw, Inc., 5033 Elston Ave., Chicago 30, Ill.**

WELDING-ALLOYS CHART — Revised chart can be filed, bound, or unfolded to an 11x23-in. chart for wall mounting. It contains information on a complete line of welding alloys covering means of application and recommended uses. Included is a full-page listing of suggestions for repairs and maintenance of equipment and machines.—**Eutectic Welding Alloys Corp., 40 Worth St., New York 13, N. Y.**

NEED STEAM?



LUCEY 104 H.P. 150 and 250 lb. W.P.
Skid mounted with 24" oil burning base.

LUCEY Inside Seal-Weld
Double Calked BOILERS

1. 1040 sq. ft. heating surface.
2. 160 cu. ft. furnace volume.
3. Ample steam volume 54 cubic feet.
4. Oversize seamless firebox.
5. Butt straps calked and seal welded inside.
6. Four-inch water space around firebox.
7. Boilers available from 40 to 150 H.P.
   Working Pressures from 125 to 350 lbs.

Write for descriptive literature.

LUCEY and LUCEY BOILER MANUFACTURING CORPORATION
Chattanooga, Tenn

SMOKE STACKS • BREECHINGS • FLY ASH REMOVAL UNITS
ASME UNFIRED PRESSURE VESSELS

SALES AND PARTS SERVICE

A department devoted to manufacturers' activities involving the sale and distributon of products and parts, and service facilities. Designed to give the reader information that will enable him more readily to purchase products and parts and to service his equipment.

Distributor Appointments

Joy Mfg. Co.: Capitol Equipment Co., Inc., Harrisburg, will handle sales of Joy construction equipment in the area covering 16 counties of central Pennsylvania, lying west of Berks and Northumberland.

Worthington Pump & Machinery Corp.: Two domestic and one foreign appointments have been announced. Andrews & Andrews Equipment, Portland, Ore., will handle Worthington's construction equipment in Oregon and eastern Washington. The Hutchinson Foundry & Steel Co., Hutchinson, Kan., will cover the south central Kansas area. And J. S. Innes, Ltd., Leaside, Ontario, will serve Quebec and Ontario.

Eriez Mfg Co.: C. D. Sutton, Inc., is Los Angeles representative for Eriez magnetic separation equipment.

Huber Mfg. Co.: McCall-Gardner Machinery Co. will handle sales in the Houston, Tex., area. Offices, parts building, and warehouse are at 4720 Griggs Road.

Tube Reducing Corp.: Joseph T. Ryerson & Son, Inc., is named exclusive warehouse distributor of Rockrite tubing.

Reed Roller Bit Co.: Montes y Valles, S. A., Vallarta 1—305B, Mexico 4, D. F., is distributor of Cleco products in that area.

Nordberg Mfg. Co.: Dakota Electric Supply Co., Fargo, N. D., is distributor for North and South Dakota, northwestern Minnesota, and northeastern Montana.

C. S. Johnson Co.: Cunningham-Ortmayer Co., Milwaukee, is appointed distributor for the Wisconsin area of this Koehring Co. subsidiary.

Cleaver-Brooks Co.: Standard Steel Corp., Los Angeles, is exclusive southern California distributor for the C-B portable steam generators and tank car heaters.

Production

Bethlehem Steel Co.: Frank A. Strouce is general manager, fabricated steel construction, succeeding the

DELIVERING WET CONCRETE
direct from mixer truck to forms, Farquhar Trough Conveyors rapidly pay for themselves by eliminating scaffolding and ramp construction.

Get *MORE* work done ... in *LESS* time ... at *LESS* cost with FARQUHAR TROUGH CONVEYORS

A Farquhar Trough Conveyor takes the place of several men . . . speeds up all materials handling . . . releases manpower from handling jobs to do more *actual construction work!* Contractors everywhere are saving *time, money, labor* with Farquhar Conveyors, moving wet concrete directly from mixer to work area without loss due to repeated handling. Farquhar Conveyors help you speed up your construction jobs . . . eliminate profit losses due to behind-schedule work!

For *All* Handling Jobs ... in *All* Industries

All through industry you'll find Farquhar Conveyors saving time, money and manpower . . . handling sharp and abrasive materials with the same ease and efficiency as fine, powdery substances . . . and doing it *faster, better, cheaper!* Contractors, chemical plants, warehouses, department stores, *all* industries, turn to Farquhar for answers to their specific materials handling problems. Farquhar offers you a complete line of conveyors for portable, semi-permanent, or permanent use, to handle any and all kinds of loose or packaged materials, speed up handling operations, cut labor costs! Send for information *now* on the Farquhar Conveyor that can *save you money!*

FREE INFORMATION

A. B. FARQUHAR COMPANY, Dept. M-26
142 N. Duke St., York, Pa., or
618 W. Elm St., Chicago 10, Ill.

Gentlemen: Please send me complete information on Farquhar Trough Conveyors.

Name .....
Firm .....
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City ..... State .....

HYDRAULIC PRESSES • FARM EQUIPMENT • FOOD PROCESSING AND SPECIAL MACHINERY

New Maintenance Tool

UNI-CHANNEL

SENSICON DISPATCHER

the *best* in low-cost

2-WAY RADIO

6 OR 12 VOLT DC VERSION AS EMERGENCY BASE STATION

117 VOLT AC VERSION AS A BASE STATION

Take it along—Anywhere, it's built to take it. Eliminates outage, mileage, maintenance costs.

Long, trouble-free operation and protection against obsolescence.

No less than EIGHT exclusive MOTOROLA developments make it your first choice in low-cost 2-way mobile radio!

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AND DON'T FORGET TO NOTIFY YOUR POSTMASTER, TOO!

late Edwin J. Paulus. Walter E. LaBelle is assistant general manager.

Clyde Iron Works, Inc.: Robert P. Fox is named chief engineer succeeding the late O. L. Berby.

Davey Compressor Co.: W. W. Warner is vice-president in charge of engineering.

Drake-Williams-Mount Co.: Vernon H. Reisser joins the company as vice-president in charge of engineering.

Worthington Pump & Machinery Corp.: William F. Weinreich is in charge of the newly acquired Oil City, Pa., plant.

Universal Concrete Pipe Co.: James R. Barnes is research and development engineer.

Ladish Co.: E. O. Dixon is vice-president in charge of research and metallurgy; T. L. Swansen is vice-president in charge of manufacturing.

New Plants and Offices

Air Reduction Sales Co.: New manufacturing plant containing 272,000 sq ft is to be built at Union, N. J.

H. K. Porter Co., Inc.: Quaker Rubber division announces a $1,500,000 expansion of plant and manufacturing facilities in Philadelphia.

Aluminum Co. of America: Will build a new alumina plant near Bauxite, Ark.

Fuller Mfg. Co.: Has completed a new building to house expanded service facilities. Construction of a second new building is under way.

Rockwell Mfg. Co.: New plant (150,000 sq ft) is being built at Tupelo, Miss.

New Sales Outlets

Black & Decker: Buffalo sales and service branch is in a new 4,100-sq-ft building at 881 W. Delavan Ave.

Flintkote Co.: Industrial Products Division has occupied its new offices in the Cafritz Bldg., 1625 E St., N. W. Washington, D. C.

Garlinghouse Bros.: Warehouse to be built at 2415 E. Washington Blvd., Los Angeles, will cost $60,000. Floor area is 9,000 sq. ft.

Lewis-Shepard Products, Inc.: New and larger facilities for New York City and New Jersey areas are located in North Bergen, on U. S. Route 1, near the Lincoln Tunnel approach.

Armstrong Cork Co.: Modernization and expansion program ($1,000,000)

(Continued on page 168)

Rodgers Hydraulic

JACKING EQUIPMENT...

- JACKING CYLINDERS (50 TO 600 TONS)
- HAND AND POWER PUMPS
- QUICK COUPLERS
- VALVES AND HOSE

Photo shows two Rodgers 300-Ton double-acting jacking cylinders (operated by Rodgers power-driven hydraulic pumps) jacking 72" compressed concrete pipe. Hose connects cylinders with pump.

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- JACKING CORRUGATED PIPE
- JACKING WELL CASING
- JACKING SHIELD FOR TUNNELING

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Rodgers Hydraulic, Inc.

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the fast,

low-cost way

to get

worn teeth

back in service!

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AMSCO Repointer Bars

3 teeth partially rebuilt with AMSCO Repointer Bars to show sectional view of welding method. These Repointer, or Wedge Bars, are also made in many shapes and sizes. Apply AMSCO Economy Hardface to the rebuilt tooth *—for as much as 3 times longer service!*

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AMERICAN Brake Shoe COMPANY

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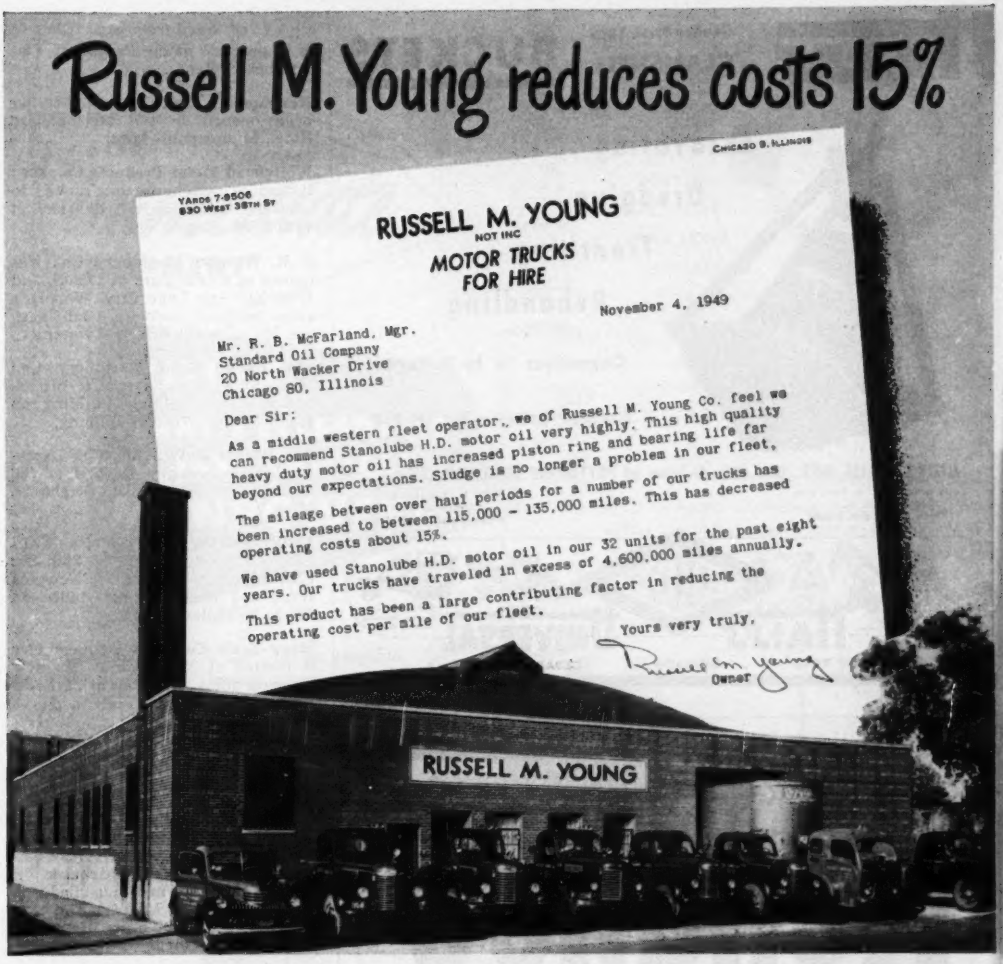
YARDS 7-8506
830 WEST 38TH ST
CHICAGO 9, ILLINOIS
RUSSELL M. YOUNG
NOT INC
MOTOR TRUCKS
FOR HIRE
November 4, 1949
Mr. R. B. McFarland, Mgr.
Standard Oil Company
20 North Wacker Drive
Chicago 80, Illinois
Dear Sir:
As a middle western fleet operator, we of Russell M. Young Co. feel we can recommend Stanolube H.D. motor oil very highly. This high quality heavy duty motor oil has increased piston ring and bearing life far beyond our expectations. Sludge is no longer a problem in our fleet.
The mileage between over haul periods for a number of our trucks has been increased to between 115,000 - 135,000 miles. This has decreased operating costs about 15%.
We have used Stanolube H.D. motor oil in our 32 units for the past eight years. Our trucks have traveled in excess of 4,600,000 miles annually.
This product has been a large contributing factor in reducing the operating cost per mile of our fleet.
Yours very truly,
Owner
RUSSELL M. YOUNG

THE benefits reported by Mr. Young are typical of those obtained by operators of all types of automotive equipment — trucks, buses, tractors, taxis — when STANOLUBE HD has been used.

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Quality products still available at moderate cost.

UNIVERSAL ROAD MACHINERY CO.
Kingston, N. Y., U. S. A.
DISTRIBUTORS IN ALL PRINCIPAL CITIES OF U. S. A.

(Continued from page 164)

is in progress at the Pensacola, Fla., fiberboard plant.

Kennametal, Inc.: District office has been opened in the Metropolitan Bldg., Minneapolis, Minn.

Whitehead Metal Products Co., Inc.: Baltimore warehouse has moved to enlarged and improved quarters at 4300 E. Monument St.

J. K. Wheeler Machinery Co.: Has moved to a new plant at 1485 S. 2nd West St., Salt Lake City. Wheeler's sales territory includes Utah, eastern Idaho, and western Wyoming.

The Euclid Road Machinery Co.: Minnesota sales and service branch has moved to a new building on Highway 169 West in Hibbing.

The Wilbur & Williams Co.: Executive offices are now located at 130 Lincoln St., Boston 35 (Brighton), Mass.

Fafnir Bearing Co.: Charlotte (N.C.) office has moved to 119 W. 29th St.; Chicago office, to 3334 W. Newport Ave.; and the Cincinnati office, to 920 E. McMillen St.

Howe Scale Co.: New Denver office is located at 2524 Walnut St.; new Houston office is located at 2215 McKinney Ave.

Sika Chemical Co.: Has opened a Pittsburgh branch office at 335 Fifth Ave.

Ownership Changes

Allis-Chalmers Mfg. Co.: Physical assets of the Canadian Allis-Chalmers, Ltd., have been purchased by a new wholly owned subsidiary of the Allis-Chalmers Mfg. Co. The new subsidiary is known as Canadian Allis-Chalmers (1951) Ltd.

Independent Pneumatic Tool Co.: Has purchased Armstrong-Whitworth & Co., Pneumatic Tools, Ltd., Gateshead-on-Tyne, England. It is an affiliate of Independent Pneumatic Tool Co., Ltd., London, a subsidiary of the parent company operating in Aurora, Ill.

Personnel Election

Malsbury Mfg. Co.: A. E. McIntyre, president; and Walter Taylor, vice-president.

Turner Construction Co.: George E. Horr is executive vice-president; D. C. Andrews, F. G. Warren, and E. K. Abberley are vice-presidents; and S. H. Usher is senior assistant treasurer.

W. & L. E. Gurley: Edgar H. Betts is elected chairman of the board; Charles A. Smart is re-elected president; Robert Gurly Betts, vice-president and treasurer. Lester C. Higbee,

(Continued from page 170)

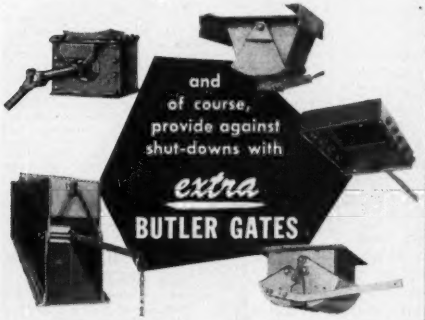
READY
FOR
immediate
SHIPMENT

BUTLER
PLANT ACCESSORIES TO SAVE CRITICAL MANPOWER!

Bring your plant to the highest possible production at the lowest cost for labor. These BUTLER plant Accessories for the Roadbuilder, the Ready Mixed Concrete and the Concrete Products operator are designed by engineers who have had many years of close association with materials handling in concrete production.

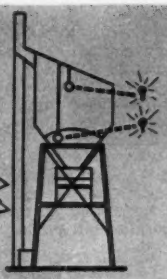
Install them now. They'll pay you a handsome profit in these days of labor shortages.

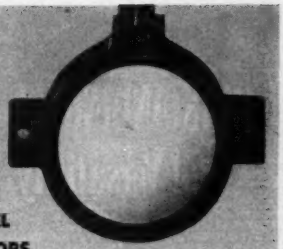
BUTLER BIN CO. ***WAUKESHA, WIS.***



Bin gates *do* take a beating. Probably no other spot in a plant is subjected to such constant and heavy wear. Keep *extra* gates on hand in case of trouble. It will pay!

Butler offers every type of gate for every material.





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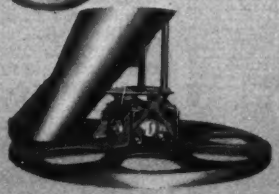
Virtually indestructible, highly sensitive, low in cost. Sealed against dust or moisture. Works with virtually any bin-stored material. Complete information on request.

BUTLER CEMENT AERATOR

Most compact equipment made. No other offers compressor, tank, motor, moisture trap and all controls in one package. Takes no more space than a standing man. Dual pressure take-off permits use of air for other applications, too.



PUSH-BUTTON TURNHEAD

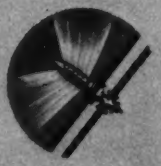
Like an automatic elevator, Turnhead stops at any station, from one to eight, at command of proper button. Great time and labor saver in changing aggregate bin compartments.

AIR JETS

Activated by BUTLER Cement Aerator, BUTLER Air Jets are quick-acting, trouble-free, positive and durable. Easy to install.

CONCRETE HOPPERS

Saves costly truck waiting time. Truck loads hopper and is off and away. Buggies or barrows unload Hopper in meantime. Easily transported.



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Powerful and instant in action BUTLER Steam Jets are virtually a "must" for good operation in cold weather.

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OUTSTANDING Value and Versatility

"No. 3500"
Steel Nipple

Used wherever ordinary hose nipples can be used, yet far more convenient and economical. Shank has deep, smoothly-finished corrugations, and large capacity bore in all sizes. Machined from tough, cold-drawn steel bar.

Stocked by Manufacturers and Jobbers of Mechanical Rubber Goods.

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Main Office and Factory: PHILADELPHIA 22, PA.
BRANCHES: CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON

(Continued from page 168)

general sales manager and director of engineering, retains the position of secretary.

Allis-Chalmers Mfg. Co.: W. A. Roberts is president succeeding the late Walter Geist.

Borg-Warner Corp.: Harold G. Ingersoll is elected vice-president in addition to serving as president of the corporation's Ingersoll Steel Div.

Sales Personnel

American Chain & Cable Co., Inc.: Robert Pollock is district sales manager for the New York district of the wire rope divisions.

Duff-Norton Mfg. Co.: T. W. Krueger is upped to assistant general sales manager.

Detroit Automotive Products Corp.: L. A. (Larry) Armentrout is named eastern regional manager.

Fruehauf Trailer Co.: E. S. Quarngesser is elected vice-president in charge of eastern sales. Also announced is the appointment of nine division managers to direct sales activities. They are: E. C. Henning, Oakland, Calif.; R. D. Mains, Chicago, Ill.; R. B. Hollingsworth, Charlotte, N. C.; R. H. Montgomery, Omaha, Neb.; Paul G. Secoy, Pittsburgh, Pa.; N. A. Carter, Jr., Memphis, Tenn.; Earl E. Wright, Denver, Colo.; A. G. Russ, Ft. Wayne, Ind.; and A. V. Tice, Los Angeles, Calif.

Cooper-Bessemer Corp.: Walter H. Kraemer is added to the field sales and services office in San Francisco.

The Celotex Corp.: George E. Gillespie is assistant manager of the Philadelphia branch.

Atlas Chain & Mfg. Co.: Carl J. Meister is appointed vice-president and director of sales. D. A. Paisley is named technical sales representative in the Chicago office.

Hewitt-Robins, Inc.: H. E. Shawver is manager of construction industry sales. He will maintain his office in Dallas, Tex.

The Colorado Fuel & Iron Corp.: Robert M. Wagner is appointed sales manager of the wire products department. He succeeds L. A. Watts, named assistant general sales manager of the Wickwire Spencer Steel Division.

Nordberg Mfg. Co.: Francis W. Cross joins the company as sales engineer, heavy machinery division.

Shunk Mfg. Co.: J. Austin Carrington joins Shunk as director of sales. Walter A. Wind joins the company as assistant to the general manager.

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Here, to meet the needs of practicing engineers who must solve specific problems — particularly those outside their specialized fields — is a modern treatment of the *fundamentals, theory,* and *practice* of the various subdivisions of civil engineering. With the aid of the up-to-date, detailed data and practice given in this completely revised 3rd Edition, you can check your present methods and procedures . . . enhance your ability to handle all kinds of jobs *more quickly and efficiently.* Each of the book's 10 big sections has been completely rewritten to bring you right up to the minute on advances and developments in the widely diverse fields of civil engineering.

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another MULTIFOOTE record!

WILLIAMS PAVING CO., does it again!

● 5302 Lineal Feet ● 7069.3 Square Yards
● 9 in. x 12 ft. Slab ● 13½ Hours—One Multi-Foote Single Drum Paver—One MultiFoote DuoMix Paver

THIS is a record for two paving machines on the Pennsylvania Turnpike and is, we believe, *a Record* for two Paving Machines anywhere in the United States, or the world for that matter. This Record was made by Williams Paving Co. of Norfolk, Va., and is the second record established by this concern with MultiFoote Pavers.

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Good organization and equipment that keeps a-running mean high output at low cost. MultiFoote simplicity of design means easier upkeep and less down time. MultiFoote positive, easy operation means speed in charging, speed in discharging and speedy bucket action. MultiFoote high output is proved.

Plan on a full Blaw-Knox Package from Batcher to Finisher. Ask for details. One responsibility and coordinated equipment means profit.

THE FOOTE COMPANY, INC.
Subsidiary of Blaw-Knox Co.
1910 STATE STREET — NUNDA, NEW YORK

MULTIFOOTE PAVER

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How to cut your overhead —underground

IF you think that there aren't ways of saving on foundation costs, you'll be surprised when you see what Monotube Steel Piles can do for you.

Monotubes are manufactured in 3 tapers; from a standard 8" nose they taper uniformly to any of four standard diameters, all extendible for an indefinite length to satisfy conditions known or unforeseen. Gauge of metal may be varied for any section as needed—providing economical construction. These light, sturdy tubes result in structurally sound, lasting installations. Jobs started with Monotubes can be *completed* with them—avoiding delays, complications, and undue expense.

And Monotubes are adaptable to practically any type of structure. Their fluted, cold-rolled construction adds strength and stability to resist severe driving as well as uplift, lateral and torsional forces.

Moreover, Monotubes are light in weight which simplifies and speeds handling. They require no special driving equipment. Cut-offs can be made easily, with minimum waste. These and other advantages mean foundations will *cost less* per ton of load supported.

For complete information, write The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL

Monotube Foundation Piles

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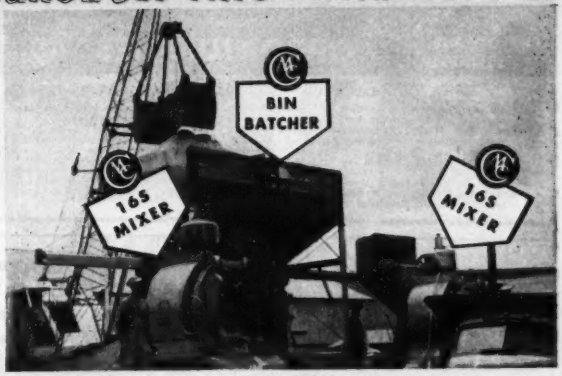
You can't beat this combination



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WATERLOO IOWA U.S.A.
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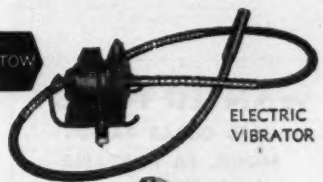
DUMPOVER PARTS

Why STOW concrete vibrators do your job better!

Equipped with work-proved STOW Flexible Shaft



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USED CEDAR RAPIDS
MODEL FA PORTABLE
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With Gar Wood angle blade, double drum cable control unit and canopy top. Excellent condition. About 5300 hours use. Can be inspected near Jackson, Ohio. Contact Ralph White, Phone 404-Y, Jackson, Ohio or Leonard Murphy, 1236 Seventeenth Street, Phone 70314, Portsmouth, Ohio.

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STOP *that* WATER

WITH FORMULA NO. 640. A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals —holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring —no membranes. Write for technical data—free sample.

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It takes a man less time to do more work with

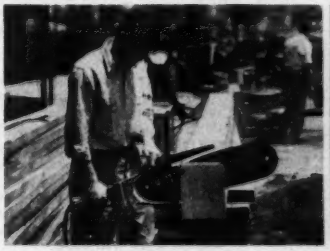
HOMELITE HIGH CYCLE POWER

With a Homelite Dual Purpose Generator you can operate the newest type concrete vibrators . . . the high cycle vibrators that enable one man to do the work of three.

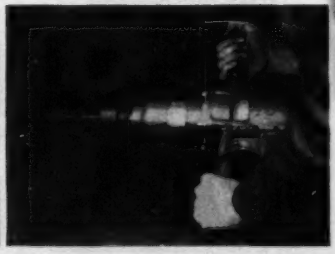
Look into this, *seriously.* Contractors . . . more and more . . . are using high cycle power tools to speed work and cut man hours. And Homelite is making this possible with its lightweight, carryable, gasoline engine driven generator . . . a Homelite Dual Purpose Generator that supplies high cycle power as well as standard 110 volt current.

With this type of generator . . . the only one of its kind . . . you can mix the old with the new. You can use it to operate your old standard universal tools or floodlights. And, at the same time, you can use it to operate the newer, lighter weight, more productive and easier-to-handle high cycle tools.

Write today for a free on-the-job demonstration.



With a Homelite Dual Purpose Generator you can operate Homelite High Cycle Electric Chain Saws . . . the lightweight one man chain saws that cut cutting costs down to a new amazing low.



The high cycle tools . . . impact wrenches, drills, grinders, etc . . . that you can operate with a Homelite Dual Purpose Generator are lighter-weight, faster-working, easier to handle and far more trouble-free.

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PUMPS • GENERATORS •
BLOWERS • CHAIN SAWS

PERFORMANCE • DEPENDABILITY • SERVICE

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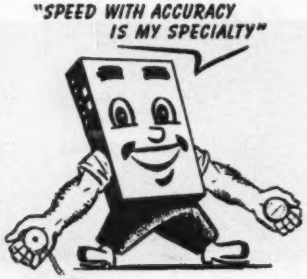
CORPORATION
1003 RIVERDALE AVENUE • PORT CHESTER, N. Y.

Two 80' Digester Tanks UNI-FORMED with... *Accuracy Speed Economy!*

5 Men
Erected and Braced
4500 sq. ft. in 20 hrs.
Walls Checked within ¼" of True Round
Part of Tucson Sewage Treatment Plant M. M. Sundt Construction Co., Contractors
SAFETY FIRST!
Clear Working Area . . .
Faster Forming . . . Easier
Concrete Placement
Allignment and Bracing on inside only

Only UNI-FORMS Provide 3-Way Savings . . . Time . . . Labor . . . Materials



THE JOB: Form and pour two 80' digester tanks. Walls vary from 15 to 21 inches, are 32 feet high. Tolerance ½". Forms must check within ¼" of true round. Concrete to be of high density, watertight consistency with a smooth face.

THE PROBLEM: Maintain required tolerances. Form and hold two pours—18 and 14 ft. high. Obtain maximum speed and economy in entire forming and pouring operation.

THE RESULT: UNI-FORMS were used to form the job. In spite of the high lift and accuracy required, alignment and bracing was necessary on 1 side only. Accuracy was maintained throughout. Erection of panels was fast—5 men erected 4500 sq. ft. of first lift in 20 hours. Finished concrete surface met specifications for smoothness. Contractor expects to finish job several months ahead of schedule. Congratulations to M. M. SUNDT CONSTRUCTION CO. for a job well done.

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Concrete Form Specialists Since 1912

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Here Pozzolith's cement dispersing, water reducing action gave the light weight concrete on steel deck, and the regular concrete for basement walls easy placeability, designed strength, low permeability and great durability.

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Full information and booklet on request.

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For non-shrink grouting and reintegration.

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For "iron-clad" concrete—industry's toughest floor. Noncolored and 11 colors.

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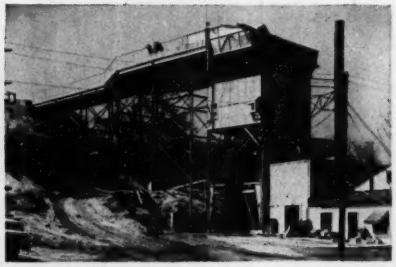
CLEVELAND 3, OHIO TORONTO, ONTARIO

BLUE BRUTE USERS AGREE:

"It's a Great Line of Mixers!"



FOR CENTRAL MIXING This modern plant of the Clark Certified Concrete Company, Inc., of Baltimore, Md., produced 125,000 yds. of pre-mixed concrete during the past year. Vice-President Duncan writes: **"Your Blue Brute 84-5 Stationary Mixer has proven entirely satisfactory. Maintenance costs have been practically nothing."**

FOR PORTABLE MIXING. Le Roy W. Vival, chief engineer of the O'Sullivan Rubber Corporation, Winchester, Va., reports: **"We are extremely gratified by our Blue Brute 3½S Tilting Mixer, which has had two years of constant, severe use. It is extremely mobile, well constructed and performs excellently. Long exposure has not decreased its efficiency. The mixing cycle is fast and the mix consistently uniform. It is a pleasure to endorse and recommend this equipment."**

FOR TRANSIT MIXING. President Bob McCorkle of the Abilene, Texas, Concrete Company, gives his reasons for re-ordering Blue Brute Hi-Up Truck Mixers: **"We have compared competitive makes on our jobs and find your Hi-Ups best in every way. Maintenance costs have been negligible. Just purchased your first chain-drive Hi-Up and find it even better than the older machines — faster charging and discharging, easier to maintain and smoother running."**

FOR PLACING. In building the Washburn vehicular tunnel under the Houston, Texas, ship channel, the "Trench method" of construction was used. The last yard or two of concrete placed in each of the section joints had to be placed *straight upwards* — a tricky pouring problem. Merritt-Chapman & Scott Corporation reports **an easy solution was found with the aid of a Blue Brute Pneumatic Placer, which performed excellently.**

Yes, among Blue Brute owners it's a never-ending story of more concrete at lower cost, trouble-free operation, time and money saved in every detail of mixing operations. Why not look into this proof that *there's more worth in Worthington?* See your nearby Worthington-Blue Brute Distributor, or write for bulletins on mixer types in which you're interested.

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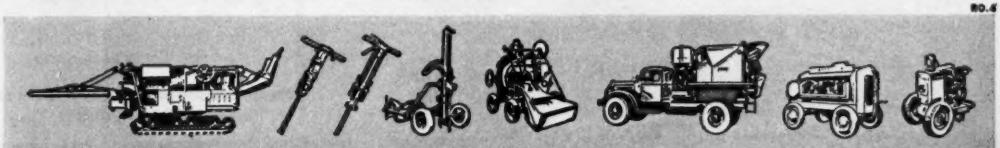

IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB